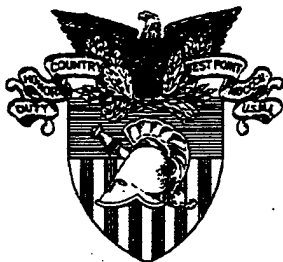


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**Installation Status Report
Part I - Infrastructure
Part II - Environment
Expanded Field Test
After Action Report**

**Operations Research Center, USMA
Office of the Assistant Secretary of the Army
(Financial Management)**

1 April 1995

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Installation Status Report
Part I - Infrastructure
Part II - Environment
Expanded Field Test After Action Report

Prepared by

Operations Research Center (ORCEN), United States Military Academy
Office of the Assistant Secretary of the Army (Financial Management) (OASA(FM))
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Cost and Economic Analysis Center (USACEAC)
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1 April 1995

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Executive Summary

Results of the initial field test of Part I Infrastructure of the ISR were briefed to the Army leadership in the 1st quarter of FY94. These briefings culminated in the CSA directing an expanded field test of Part I Infrastructure and an initial field test of Part II Environment. When briefed on the results of this expanded field test, *the Chief of Staff, Army approved CONUS implementation of the ISR, Part I Infrastructure, for 3rd quarter, FY95. The CSA directed OASA(FM) and ORCEN to do more work on Part II before it is implemented Army-wide.*

The ISR development team received feedback from test installations by conducting in-progress assistance and validation visits to 24 of the 25 test sites, through feedback surveys completed by installation commanders and ISR action officers, and through post test teleconference after action reviews. Some of the key learning points from this feedback were:

- (1) Installation Commanders gave strong support to the idea of using C-ratings to describe infrastructure. The current ISR area structure is adequate to cover the major types of infrastructure found on most posts.
- (2) Installation commanders and action officers do not feel very confident in the costing or resource aspects of the ISR.
- (3) Both the G-3, Directorate of Plans and Training and the Directorate of Public works (DPW) office are the main activities used as an installation's lead ISR office.
- (4) The inspection process is most efficiently completed using both centralized teams for common facilities (e.g. installation utility systems) and individual facility users.
- (5) The facility requirements and assets data edit process is needed for the ISR to accurately portray infrastructure conditions.

Test MACOMs generally believed the ISR provides a realistic overview on the readiness of the MACOM's infrastructure and that Army-wide standards are extremely useful in communicating HQDA vision of facilities excellence. They also felt the ISR is a valuable management tool for real property managers. However, MACOMs believed the ISR estimated costs are under/overstated as compared to installation and MACOM data and, therefore, they are uncomfortable using this data in budget decision processes.

Data produced by the test revealed potential systemic problems in General and Applied Instructional facilities, operations facilities, Senior Enlisted/Bachelor officer quarters, barracks, child development centers, and community centers. Care should be taken not to attribute too much significance to potential facilities problem areas, since ISR facilities standards and requirements are still being refined.

The ISR will provide, for the first time, *a consistent estimate of the resource requirements to sustain and improve facilities and installations*. These estimates will be used (at HQDA level) in comparing resource plans during the Program Operating Memorandum (POM) building process. CEAC used several methods to validate the Part I renovation, sustainment, and new construction cost factors after the test. By comparing actual inspection worksheets to project cost estimates, comparing new construction costs to private industry-wide costs and the Unconstrained Requirements Report (URR) costs, and by comparing the Sustainment cost factors, Army-wide value, to both FY 93 actual costs and the URR, CEAC validated these factors as useful to forecast *Army-wide requirements*.

The software for the expanded ISR test was generally well received and proved user-friendly for Part I. A number of "bugs" were found during conduct of the test of which most were minor and a working solution was devised to allow the user to proceed. These are the main items which need software / database revisions based on feedback from the second field test; edit capability of facility data after a color rating is entered, UIC data pull from installation data bases, and visibility of funded construction dollars in Appropriations Reports.

The expanded test of the ISR included the first test of the Part II - Environment status report. The purpose of Part II is to provide a macro-level status of environmental conditions on installations evaluated against an Army-wide set of standards. The test MACOMs and installations voiced several concerns with the original standards, prompting OASA(FM) and ACSIM to jointly sponsor a Part II standards workshop in May 1994 at the Army's Environmental Center (AEC). Representatives from seven of the test installations and three of the test MACOMs, together with the AEC, ACSIM and ORCEN, revised the standards and sent them back out to the installations for re-testing. Installations still had concerns with these revisions so Part II will be further refined and tested prior to implementation.

These are consensus feedback comments from both HQDA and MACOM staffs regarding the potential value added of the ISR:

- (1) The ISR now gives a *Commander's overview* of the status of facility conditions on an installation.
- (2) The ISR data provides an assessment of conditions now measured against a common set of standards, thus "leveling the playing field".
- (3) The ISR will help highlight key, systemic problem areas so that the leadership can focus resources to the areas of most need.
- (4) The ISR will aid decision makers in stationing analysis.

(5) The ISR will better help the DA staff to meet the requirements of the Chief Financial Officer's (CFO) Act. Also, the ISR process is in keeping with the guidelines of the National Performance Review and the Government Performance Review Act.

(6) The ISR will eventually help the Army defend resource requirements for its installations to the Defense Department and Congress since these resource requirements are generated using a standard system.

After analyzing all the feedback and test data, these issues stand out as needing the most emphasis in further improving Part I of the ISR:

(1) **C-Ratings:** A weighting scheme may need to be incorporated into the software to account for relative asset size and importance to the installation.

(2) **Implementing Instructions:** The instructions should provide more detail on the operational aspects of implementing the ISR and improved instructions for completing the appropriations reports.

(3) **Inspection Process:** The format of the inspection worksheet should incorporate instructions on determining the overall facility color rating.

(4) **Database / RPLANS Concerns:** The CATCODE structure for training ranges needs to be updated to better capture the range capabilities at installations. RPLANS algorithms for training range requirements need to be revised and staffed with the ODCSOPS. Also, RPLANS algorithms for Child Development Centers and Maneuver Areas need to be updated.

(5) **Standards:** Standards improvements should focus on these categories of facilities: training ranges; utility systems; airfields; child development centers; information management; and outdoor sports and recreation facilities.

(6) **Workload Issue:** The Army leadership should follow through on the CSA's directive to phase-out and replace these reports with the ISR:

- (a) The Unconstrained Requirements Report (URR);
- (b) The Installation Commander's Annual Real Property Utilization Survey (ICARPUS);
- (c) The Backlog of Maintenance and Repair report (BMAR);
- (d) The Deferred Maintenance and Repair report (DMAR);
- (e) The Triennial facility inspection requirement.

(7) **Cost Reports:** The cost factors need to be continually updated as the ISR evolves. As more data becomes available over time, cost factors can be adjusted to improve accuracy. However, the Army will have to be educated on how to use ISR cost estimates.

1. Installation Status Report (ISR) Expanded Test Background Information

The results of the first field test of Part I Infrastructure of the ISR were briefed to the Army leadership in the 1st quarter of FY94. These briefings culminated in the CSA directing an expanded field test of Part I Infrastructure and an initial field test of Part II Environment. This expanded field test, conducted 15 February - 30 April 1994, involved the following MACOMs and installations:

AMC	FORSCOM	TRADOC	MDW	USARPAC	HSC	MTMC
Aberdeen Proving Grounds *	Fort Bragg	Fort Gordon*	Fort Belvoir*	Schofield Barracks	Fort Detrick	Military Ocean Terminal, Bayonne
Anniston Army Depot *	Fort Campbell *	Fort Knox *	Fort Ritchie	Fort Richardson (Part II only)		
Redstone Arsenal *	Fort Carson*	Fort Sill				
Rock Island Arsenal	Fort Drum	Fort Benning*				
Natick Research & Develop. Center	Fort Hood *	Carlisle Barracks				
	Fort Stewart	Fort Eustis				
	Fort Lewis					
	Fort Riley*					

* Indicates installations involved in the first field test of Part I Infrastructure

After the CSA directed the expanded field test on 4 November 1993, the ISR development team continued refinements to Part I recommended from the initial field test. The team also completed the initial field test package for Part II, briefed the leadership at each of the newly identified test installations and MACOMs, and conducted centralized train the trainer sessions for MACOM and installation points of contact (POCs). **A key lesson learned throughout the ISR development process is that**

providing information briefings to installation and MACOM leadership is definitely worth the time and effort expended. The insights gained from the installation and MACOM leadership and their desire to "buy into" the ISR effort helped improve the field test process and, therefore, the overall ISR system. **Training also proved to be important.** Since the ISR is a new process, the Army needs to be educated on how to implement the system.

During the field test, OASA(FM) received help from ACSIM and CEAC in manning an ISR "hotline" to answer questions from the field test sites. Ms. Billie Young, Mr. Bob Conte, Mr. Richard Dowling, and Mr. Bob Suchan took turns manning the hotline in order to provide timely answers to inquiries from the field. Questions raised, along with solutions provided, were distributed each week to all test sites via a newsletter prepared by Mrs. Suzanne Carlton's office with help from R&K Engineering. This weekly newsletter process was valuable in distributing lessons learned and key information needed by the test sites.

2. Results of Validation and Assistance Visits

2.1. Background. The ISR development team conducted assistance and validation visits to 24 of the 25 test installations (Fort Richardson, Alaska was excluded) during March - April 1994 using four separate teams. These teams were headed by Suzanne Carlton (OASA(FM)), Bob Conte (ACSIM), Billie Young (ACSIM) and CPT Tim Trainor (ORCEN). Each team consisted of the team leader and one or more real property management experts from R & K Engineering or Center for Public Works (CPW). Some site visits included representatives from OASA(IL&E), CEAC, and the Office of the Director of Environmental Programs (ODEP), ACSIM. Typically the visits included round table discussions with the key ISR players, inspections of specified facilities using the ISR standards, and assistance work with the installation's ISR POC and real property manager.

The purpose of the visits was threefold:

- (1) to provide any needed assistance in ISR preparation;
- (2) to validate how installations implement certain processes involved in completing the ISR; and
- (3) to foster the concept that developing the ISR requires a "team" approach of HQDA, MACOMs, and installations all contributing to the fielded system.

2.2. Checklist Analysis.

2.2.1. General. We developed a standardized checklist to ensure the same questions were asked of all test installations. This enabled us to evaluate, or validate, how installations performed certain key processes in the ISR. This checklist focused on

installation organization to complete the ISR, the inspection process, and the interface with real property management. This analysis includes checklist data from 23 installations. Some checklists were not 100% complete, because the timing of the visits came before the installations had completed certain ISR processes. One installation's checklist was not completed since they had progressed very little in executing the ISR at the time of the team's visit.

b. **Methodology.** The checklist data and the calculated statistical measures (mean, mode and median) used in this analysis are provided in **Appendix A**. The results listed in the next paragraph are conclusions drawn based on the mode response to the checklist questions.

c. **Results.** These are the inferences that can be drawn from the analysis of visit checklists:

(1) Both the G-3, Directorate of Plans and Training and the Directorate of Public works office are the main activities used as an installation's lead ISR office.

(2) The Part I Infrastructure instructions are clear and easy to follow.

(3) The Part II Environment instructions are clear; however, there is concern with ambiguous and subjective rating algorithms.

(4) The inspection process is most efficiently completed by using centralized teams for common facilities (like installation utility systems) and facility users for other facilities.

(5) All test installations, except the two large sites (Bragg and Hood), inspected more than 80% of their permanent facilities in the two-month test window. A three-month report preparation period should be adequate for installations to inspect all permanent facilities.

(6) The ISR instructions should specify a sample size for inspections done by a random sampling method for large groups of facilities such as housing.

(7) The training video is good for training inspectors; however, there is a need to develop a shorter video that deals with only the inspection process. We should use two or three building inspections as examples.

(8) The inspection worksheet still causes confusion in determining the overall facility color rating. We need to redesign the worksheets to include instructions on how to determine the overall rating based on the majority and critical item color ratings.

(9) We need to better address, through instructions and training, how to consider handicap access and historical facilities in the inspection process.

(10) Future instructions and training need to better address the staffing process for the ISR (i.e. who should staff the report and how should it flow through the channels to the installation commander).

(11) Overall, the visit team inspectors matched the installation-found facility color rating for 64% of the facilities inspected. Visit team inspectors matched the individual inspection item color ratings for approximately 73% of the items. Based on these results, we cannot conclude the ISR inspection process is totally objective. Results will vary as long as different users are performing inspections. Results between different inspectors will probably become more consistent with further training and familiarization with the process;

(12) Many installations appear to be in good shape in terms of the Real Property Inventory (RPI) database accuracy; however, some installations have significant problems. Having the direct edit capability for RPI in the ISR did not appear to keep installations from submitting RPI changes through appropriate channels.

(13) Installations are reluctant to change facility requirements unless they receive guidance from higher headquarters.

(14) Installations were concerned that changing Army Stationing and Installation Plans (ASIPs) would require them to submit Facility Allowances and Requirements Analysis (FARA) changes often, making the FARA process labor intensive.

3. ISR Part I Test Feedback from Installations

A feedback survey accompanied the test of Part I. We have analyzed both the survey and the input from the commanders' cover memos. This section summarizes the results of the analysis on the commanders' cover memos and ISR POC surveys.

3.1. Commander's Feedback Survey. The Installation Commander's Feedback Survey showed that there is strong support for the idea of using C-ratings to describe infrastructure. The feedback showed that the current ISR area structure was adequate to cover the major types of infrastructure found on most posts. On the other hand, the installation commanders do not feel very confident in the costing or resource aspects of the ISR. **Appendix B** contains the statistical results of these surveys and excerpts from the written comments attached to these surveys.

3.2. ISR POC Survey. The POCs felt strongly that the facility requirements and assets data edit process is needed for the ISR to accurately portray infrastructure conditions. Respondents were in strong agreement that a C-rating system of C-1 through C-5 is sufficient to describe infrastructure conditions at installations, given satisfactory facility standards and algorithms. Also they agreed that the worksheets for recording

facility quality ratings using green, amber, and red were helpful and relatively easy to use and that the ISR software is user-friendly.

The three questions scoring the lowest marks were related to costs. It is apparent that the cost functions are not well understood. The three standards booklets that received the worst feedback dealt with Training Ranges and Areas, Ports, and Electric/Gas Utility Systems. **Appendix C** contains a more detailed summary of this survey and the analysis results.

3.3. Supporting (Repeated) Comments From Memos / Surveys. Some comments that were repeated on several surveys include:

- (1) This is an effective tool for highlighting installation conditions.
- (2) The ISR can measure changes to infrastructure over time -- a quantifiable management indicator now not available.
- (3) The ISR is useable in management decisions but not as a precise evaluation of status or as a precise costing vehicle.

3.4. Problems and Issues From Memos And Surveys. Some problems highlighted in the surveys include:

- (1) Need to update range RPI category codes (CATCODES) and/or capture more ranges in the ISR database (particularly multiuse and multipurpose ranges).
- (2) Training range C-ratings are not accurate due to database problems.
- (3) Need to evaluate a weighting scheme for C-ratings at the sub-category level based on asset size.
- (4) Consider reporting both quality and quantity C-ratings from facility category group (FCG) through Area level.
- (5) Need specific standards for more, different type, ranges.
- (6) There is a critical need for infrastructure database reconciliation of the ASIP, Integrated Facilities System Mini-Macro (IFSM), and Real Property Planning and Analysis System (RPLANS) data between HQDA, MACOMs, and installations.
- (7) Need Unit Identification Codes (UICs) in the ISR database.
- (8) The ISR cost reports are inconsistent with current funding levels / estimates.
- (9) Cost reports are not precise enough for actual planning purposes.

(10) Need to educate the field on cost report purpose, use of data, and development.

(11) Some Utility System categories, such as sewer, heat/ac, and electric/gas, need to be broken down into more specific sub-categories.

(12) Airfield equipment, such as NAVAIDS, need to be assessed separately with own standards.

(13) Concerned about the manpower resources required to compile and manage the ISR. HQDA needs to address manpower issue.

(14) RPLANS generated requirements for Child Development Centers, training ranges and maneuver areas are inaccurate across the board. Need to reevaluate these algorithms.

(15) Need to better address uses of semi-permanent assets in the ISR C-ratings.

(16) Child Development standards need to address the facility not just certification.

(17) Handicap access standards are a problem. Put them only on facilities used consistently by civilians.

(18) Put instructions on the inspection worksheet. Remove N/A as an overall facility color rating choice. Put all critical items together.

3.5. Uses of the ISR. Some potential uses of the ISR cited by installations are:

(1) To identify infrastructure areas requiring attention/resources;

(2) To reconcile and update real property databases;

(3) To review the validity of facility requirements compared to on-hand assets;

(4) As a facility condition reference to identify major problems not already being addressed; and

(5) As an estimate of resources required to improve infrastructure (particularly at MACOM and HQDA level).

3.6. Recommended Reporting Cycle. The installations were split concerning the recommended reporting cycle. Eight installations recommend annually, eight said bi-annually, and four preferred a semi-annual report cycle.

4. Test MACOM Feedback. MACOMs analyzed the ISR expanded test data and, while feedback varied, in general their comments support the ISR concept and establish utility for the data at the MACOM level.

4.1. Value Added. MACOMs provided these comments about the value added of the ISR:

- (1) Provides a realistic overview on the readiness of the MACOM's infrastructure.
- (2) Provides a macro-record of infrastructure conditions at installations.
- (3) The summary C-ratings provide the MACOM the ability to compare the installation C-ratings and can be used to prioritize projects in the resource process.
- (4) The ISR is a valuable management tool for real property managers.
- (5) The algorithms and standards are somewhat harsh and restrictive, but the C-rating is a valid and useful concept.
- (6) Army-wide standards are extremely useful in communicating HQDA vision of facilities excellence.
- (7) The ISR's integration of stovepipe reports will be its greatest value.
- (8) The ISR is an additional tool to help manage limited resources.
- (9) Provides a vehicle for Commander's awareness of facilities.
- (10) The ISR provides increased value at progressive levels of command.
- (11) The ISR provides a consistent method to highlight funding needed.

4.2. Concerns. The concerns expressed by the MACOMs are summarized as follows:

- (1) The ISR costs have under/overstated costs as compared to data from installations and MACOMs.
- (2) MACOM personnel are uncomfortable using the ISR cost data in decision processes such as the Army budgeting process.
- (3) The ISR may limit the flexibility of commanders.
- (4) It may be difficult to obtain consistent quality inspection results.
- (5) The report may have limited value at small installations.

5. Part I Test Data. This chapter discusses the actual data generated by 23 of the 25 installations during this test of Part I. Below is a table with the five major infrastructure area C-ratings reported by the test installations.

INSTALLATION	MISSION FACILITIES	STRATEGIC MOBILITY	HOUSING	COMMUNITY FACILITIES	UTILITY SYSTEMS
MDW					
FT RITCHIE	C3	C3*(C4)	C3	C3	C3
FT BELVOIR	C3	C2	C3	C3	C3
FORSCOM					
FT CARSON	C2	C2	C3*(C2)	C3*(C2)	C3*(C2)
FT STEWART	C3	C3	C3	C3	C3
FT RILEY	C2	C2	C3	C2	C2
FT CAMPBELL	C3	C3	C3	C3	C2
FT DRUM	C2	C2	C2*(C3)	C2	C1
FT BRAGG	C3	C2	C3	C3	C2
FT HOOD	C3	C2	C3	C3	C3
FT LEWIS	C3	C3	C3	C2	C2
AMC					
ANNISTON	C2	C2	C1	C3	C2
REDSTONE	C2	C3*(C2)	C3	C2	C3
ROCK ISLAND	C3	C3	C4	C3	C2
ABERDEEN	C3	C4	C4*(C3)	C3	C3
NATICK	C2	C1	C3	C2	C2
TRADOC					
FT BENNING	C3	C3	C3	C3	C3*(C2)
FT GORDON	C3	C2	C2*(C3)	C3	C2
FT KNOX	C3	C3	C3	C2	C2
FT SILL	C3	C3	C3	C2*(C3)	C2
CARLISLE BKS	C2	C2	C3	C2	C1
FT EUSTIS	C4	C4*(C3)	C4	C3	C3
BAYONNE MTMC					
FT DETRICK HSC	C2	C2	C3	C3	C2
	C2*(C3)	C2	C2	C2*(C3)	C1

Table 5.1 - Test Reported Part I Area C-Ratings

* Indicates a Commander's C-Rating Overwrite

Rating in brackets was the calculated rating prior to overwrite

5.1. Analysis of Test Data. Data produced by the ISR test has been analyzed to determine what facility status indicators are apparent and how this type of information can be used by DA and MACOM decision makers. **Care should be taken not to attribute too much significance to potential facilities problem areas, as ISR facilities standards and facilities requirements are still being refined.** C-Ratings for the component categories and sub-categories of each ISR area are provided in Appendix D.

5.2. Potential Systemic Infrastructure Problems. We analyzed the Sub-Category C-4 ratings for the test installations. It should be noted that these Sub-Category ratings are the result of averaging only one subordinate level of facilities, and therefore tend to produce many C-4 ratings. However, these C-Ratings are useful in identifying potential problem areas at the Sub-Category level. Some of these problem areas are as follows:

(1) PRINT PLANTS where there are four C-4s for quantity. All four of these TRADOC posts have print plants in non-permanent structures. Only Ft. Benning has a C-4 rating for quality. This is a problem area for TRADOC. Total estimated cost to bring TRADOC installations up to a C-3 rating is \$3.25 million.

(2) GENERAL INSTRUCTIONAL BUILDINGS where there are nine C-4s for quantity, seven of which are FORSCOM and TRADOC installations. Requirements for this category are predominantly being met using non-permanent structures. Two posts (Ft. Knox and Ft. Sill) have C-4 ratings for quality. This is a problem area for FORSCOM and TRADOC. Total estimated cost to bring FORSCOM installations to C-3 is \$44.67 million. Total estimated cost to bring TRADOC installations to C-3 is \$34.82 million.

(3) APPLIED INSTRUCTIONAL BUILDINGS where there are 13 C-4s for quantity. All, except Ft. Hood and Ft. Eustis, have the majority of their buildings designed in this category as non-permanent. Only Ft. Eustis has a C-4 rating for quality. This is not considered a priority problem area. Total estimated cost to bring FORSCOM installations to C-3 is \$41.43 million. Total estimated cost to bring TRADOC installations to C-3 is \$76.29 million.

(4) RDT&E FACILITIES where there are two C-4s for quantity (Ft. Benning labs and Ft. Sill weapon RDT&E) and four C-4s for quality (Redstone Arsenal for labs; Ft. Eustis for aircraft RDT&E and tank/automotive RDT&E; and Aberdeen Proving Ground for tank/automotive RDT&E). The two C-4s for quantity have activities in non-permanent buildings. This is not considered a priority problem area. Total estimated cost to bring TRADOC installations to C-3 is \$3.6 million.. Total estimated cost to bring AMC installations to C-3 is \$3.44 million.

(5) OPERATIONS FACILITIES where five of eight FORSCOM posts had C-4 ratings for Aviation Unit Operations Buildings. Two of the five, Ft. Riley and Ft. Campbell, also had a C-4 rating for quality. Three other MACOM posts had C-4s for quantity and one C-4 for quality. This is considered a problem area for FORSCOM. Total estimated cost to bring FORSCOM installations to C-3 is \$20.7 million.

In Brigade, Battalion and Company headquarters, Ft. Campbell was the only installation to have a C-4 for both Battalion and Company headquarters. Twelve C-4s were recorded for quantity, mostly in Brigade and Battalion headquarters buildings. Most of these requirements are met using non-permanent buildings. This is not considered a problem area. Total estimated cost to bring FORSCOM installations to C-3 is \$40.4 million. Total estimated cost to bring TRADOC installations to C-3 is \$6.5 million.

(6) GENERAL PURPOSE ADMINISTRATION where Ft. Campbell is C-4 for quality and quantity and Ft. Eustis is C-4 for quality. This is not considered a problem area as non-permanent facilities can be used. Total estimated cost to bring FORSCOM installations to C-3 is \$12.3 million. Total estimated cost to bring TRADOC installations to C-3 is \$75,000.

(7) FAMILY HOUSING where there are four C-4s for quality. Ft. Drum is C-4 for quantity but is satisfying this requirement with off-post housing. This is not considered a problem area as demand can be met with off post housing. Total estimated cost to bring FORSCOM installations to C-3 is \$64 million (\$57.4 million is for Ft. Drum). Total estimated cost to bring the TRADOC installation to C-3 is \$2.2 million.

(8) SENIOR ENLISTED QUARTERS where there are 18 C-4s for quantity and two for quality (Ft. Knox and Military Ocean Terminal, Bayonne). This is a major problem area. Total estimated cost to bring installations to C-3 is FORSCOM \$56.8 million; TRADOC \$41.4 million; MDW \$15 million; AMC \$9.13 million; MTMC \$0.15 million; and HSC \$1.8 million.

(9) OFFICER UPH where there are nine C-4s for quantity and two C-4s for quality. This is a major problem area. Total estimated cost to bring installations to C-3 is FORSCOM \$95.8 million; TRADOC \$43.8 million; AMC \$2.96 million; and HSC \$3 million.

(10) ENLISTED UPH where there are nine C-4s for quality and one C-4 for quantity. This is a major problem area. Total estimated cost to bring installations to C-3 is MDW \$8.5 million; FORSCOM \$17.1 million; TRADOC \$31.8 million; AMC \$1.7 million; and MTMC \$0.175 million.

(11) ENLISTED BARRACKS AT/MOB where there 12 C-4s for quantity. This is not considered a problem area because this requirement is being satisfied with non-permanent facilities. Total estimated cost to bring FORSCOM installations to C-3 is \$224.66 million. Total estimated cost to bring TRADOC installations to C-3 is \$41.4 million.

(12) TRAINEE BARRACKS where Ft. Knox and Ft. Sill are C-4 in quality. This is considered a problem area for TRADOC. Total estimated cost to bring TRADOC installations to C-3 is \$9.06 million.

(13) TRANSIENT HOUSING FACILITIES where there three C-4s for quantity. All three of these posts have transient facilities in non-permanent structures. Three posts (Ft. Gordon, Aberdeen Proving Ground, and Military Ocean Terminal Bayonne) have C-4s for quality. This is not considered a problem area. Total estimated cost to bring installations to C-3 is \$2.33 million.

(14) DENTAL CLINICS where there are three C-4s for quantity (Ft. Ritchie and Ft. Eustis have dental clinics in non-permanent structures; Rock Island Arsenal reports no facility on post). Two posts Ft. Benning and Ft. Eustis report C-4s for quality. This is not considered a problem area. Total estimated cost to bring installations to C-3 is MDW \$1.4 million; TRADOC \$1.9 million; AMC \$1.44 million; and HSC \$1.35 million.

(15) HOSPITALS where there are two C-4s for quantity (Carlisle Barracks and Rock Island Arsenal have no hospitals) and three C-4s for quality (Ft. Bragg, Ft. Benning and Ft. Eustis). This is not considered a problem area. Total estimated cost to bring installations to C-3 is FORSCOM \$21.77 million; TRADOC \$26.67 million; and AMC \$0.96 million.

(16) HEALTH CLINICS where there are four C-4s for quantity (all four except Ft. Eustis have clinics in non-permanent structures). Also four installations reported C-4 for quality (Ft. Stewart, Ft. Campbell, Ft. Bragg, and Military Ocean Terminal Bayonne). This is not considered a problem area. Total estimated cost to bring installations to C-3 is MDW \$0.34 million; FORSCOM \$5.66 million; TRADOC \$1.1 million; and MTMC \$0.5 million.

(17) VETERINARY FACILITIES where there are seven C-4s for quantity (all have vet facilities in non-permanent structures). Two posts (Ft. Bragg and Ft. Sill) report C-4s for quality. This is not considered a problem area. Total estimated cost to bring installations to C-3 is MDW \$58,000; FORSCOM \$3.2 million; TRADOC \$2.1 million.

(18) ACES FACILITIES where there are 13 C-4s for quantity. All 13 posts, except for Ft. Sill, Rock Island Arsenal and Aberdeen Proving Grounds, have these facilities in non-permanent structures. The above three posts do not report any ACES facilities. This is not considered a problem area. Total estimated cost to bring installations to C-3 is MDW \$2.11 million; FORSCOM \$14.25 million; TRADOC \$6.91 million; AMC \$2.53 million; and HSC \$1.0 million.

(19) CHILD SUPPORT CENTERS where there are 10 C-4s for quantity. Most posts satisfy the requirement with the use of non-permanent structures and off post private section facilities. This is considered a problem area. Total estimated cost to bring installations to C-3 is MDW \$0.47 million; FORSCOM \$39.9 million; TRADOC \$8.61 million; and AMC \$7.45 million.

(20) PHYSICAL FITNESS FACILITIES where there are seven C-4s for quantity (all seven, except for Ft. Hood, have these facilities in non-permanent structures). There are six C-4s for quality (Ft. Ritchie, Ft. Benning, Ft. Sill, Carlisle

Barracks, Military Ocean Terminal Bayonne, and Ft Detrick). This is considered a problem area. Total estimated cost to bring installations to C-3 is MDW \$2.17 million; FORSCOM \$5.8 million; TRADOC \$2.0 million; AMC \$1.4 million; MTMC \$0.43 million; and HSC \$0.95 million.

(21) BOWLING CENTERS where there are seven C-4s for quantity, all of which have fewer centers than authorized, and two C-4s for quality (Carlisle Barracks and Military Ocean Terminal Bayonne). This is not considered a problem area. Total estimated cost to bring installations to C-3 is FORSCOM \$15.96 million; TRADOC \$3.3 million; AMC \$0.63 million; MTMC \$0.44 million; and HSC \$0.7 million.

(22) COMMUNITY CENTERS where there are 10 C-4s for quantity. Ft. Stewart, Ft. Lewis, Redstone Arsenal, and Ft. Detrick report no community centers. The other six posts reporting C-4s have centers in non-permanent structures. There are six posts reporting C-4s for quality (Ft. Riley, Ft. Campbell, Ft. Hood, Ft. Benning, Aberdeen Proving Ground, and Natick Research Development and Engineering Center). This is considered a problem area. Total estimated cost to bring installations to C-3 is MDW \$0.85 million; FORSCOM \$5 million; TRADOC \$2.1 million; AMC \$0.66 million; and HSC \$0.32 million.

(23) LIBRARY CENTERS where there are 15 C-4s for quantity. Only Ft. Bragg reports a C-4 for quality. This is considered a problem area. Total estimated cost to bring installations to C-3 is FORSCOM \$30.5 million; TRADOC \$5.75 million; AMC \$1.43 million; and HSC \$0.2 million.

(24) YOUTH CENTERS where there are 10 C-4s for quantity. All ten have youth centers in non-permanent structures. Only Ft. Sill reports a C-4 for quality. This is considered a problem area. Total estimated cost to bring installations to C-3 is FORSCOM \$14.4 million; TRADOC \$1.98 million; and AMC \$0.55 million.

6. Part I Facility Standards Review

6.1. Background. The ISR was designed for the users of a facility to perform an inspection of their facilities and report the results of the inspection up the chain of command. The ISR is not a "stovepipe" reporting mechanism for the engineer. The ISR is a command report that is intended to allow the chain of command to assess the relative condition of facilities, based on common Army-wide standards, across the installation, MACOM, and Army. The ISR does not provide the details that you would normally associate with an engineering estimate developed at an installation DPW. It is not intended to replace the detailed estimates that will be developed for the budget planning process.

6.2. Development of Standards. The ARSTAF was tasked with development of standards for facilities for which they are the proponents (for example CPW is the proponent for utilities systems). For ease of use and to reduce costs, standards are

formatted as a "picture book". The standards are presented as condition descriptions of three states: "Green, Amber, and Red". The proponents used the TRADOC ACOE Pamphlet to use as a guide in developing their standards. The resulting evaluations are based on a "best fit" to the standard, i.e., an inspection item is rated the color for which the standard description best applies to the facility. The standards are not a detailed checklist for use by the evaluators.

6.3. Approach to Facility Standards Analysis. CPW reviewed the ISR field test input which includes the Commander memorandums, ISR reports, surveys, and the results of the validation visits to determine any needed changes to the facility standards. Specifically, CPW looked at the following items in analyzing the standards:

- (1) Ensuring the criteria for all standards are consistent across the red, amber, and green ratings.
- (2) Evaluating the need for common items across all facilities.
- (3) Reviewing the Critical Items on Inspection Worksheets to determine their impact on the overall facility rating.
- (4) Ensuring that Safety was considered.
- (5) Evaluating the necessity for handicap accessibility criteria on certain facilities.
- (6) Evaluating the weighting between critical items and majority items.
- (7) Determining if new standards are necessary.

6.4. Results of the Standards Analysis. Based on review of the field test data, CPW determined that the majority of the facility standards need some revision by the proponent.

(1) These ISR categories emerged as needing the most revision of standards; training ranges, utility systems, airfields (incorporating equipment standards), child development centers, information management, and outdoor sports and recreation facilities.

(2) **Appendix E** lists the 49 sub-categories in the ISR for which there are written facility standards and details which sub-categories require review or revision by the proponents, problem areas, and which MACOM and/or installation recommended the changes to these standards. These recommendations will be considered by the HQDA proponents for incorporation into the updated standards to accompany the initial CONUS fielding of the ISR.

7. Part I Cost Factor Analysis

The second field test of the ISR Part I Infrastructure used three cost factors -- renovation, new construction and sustainment -- each of which had been adjusted based on the results from the initial field test.

7.1 Validation of Cost Factors.

7.1.1. Renovation Cost Factor Validation. The ISR Part I Renovation cost factor validation used the same method as in the first test validation. The methodology takes actual inspection worksheets and estimates the cost of projects. CEAC evaluated the comparison of project costs estimated to the renovation cost factors. A plan to incorporate actual project data into CEAC's validation process is underway. ACSIM is developing procedures to capture actual project data for permanent facilities and link it to individual facility color ratings. On the basis of our validation efforts in the first and second tests, the renovation cost factors are useful to forecast *Army-wide requirements*.

7.1.2. New Construction Cost Factor Validation. The ISR Part I New Construction cost factor incorporates the standard engineer new construction data developed by ACSIM. ACSIM validated the ISR New Construction cost factors by comparing them to industry-wide costs, i.e., square foot costs in private industry for similar facilities. CEAC reviewed the ISR New Construction cost factors and adjusted them for regional differences. The costs derived from the ISR New Construction cost factors were in line with, but slightly less than, the amounts shown in the Unconstrained Requirements Report (URR). On the basis of ACSIM's validation efforts and CEAC's review, the ISR Construction cost factors are useful to forecast *Army-wide requirements*.

7.1.3. Sustainment Cost Factor Validation. The Sustainment cost factors used the data contained in the Maintenance and Repair Predictive Model (MRPM) and were adjusted to reflect changes in inflation. The remaining Facility Category Groups (FCGs), not covered by MRPM cost factors, used the data from the Engineer Red Book calibrated to a three-year moving average of actual expenditures. CEAC's validation included the comparison of ISR test results to actual expenditures. Validation results from the first test showed a 15% difference between ISR and actual expenditures. Validation from the second test improved to an 8% difference between actual Sustainment costs for FORSCOM and ISR results. Additionally, CEAC compared the ISR Sustainment cost factors, Army-wide value, to both FY 93 actual and the URR. The results show the ISR cost factors produced a value 22% higher than FY 93 actual but 18% lower than the URR. On the basis of CEAC validation and comparative analysis (FY 93 and URR), the ISR Sustainment cost factors are useful to forecast *Army-wide requirements*.

7.2. Field Test Feedback and Follow-up. CEAC reviewed comments on the second ISR test from the 25 installations. Of the 25 memoranda, 16 had no comment and nine made references to cost or budget dollars. Two of the nine installations, Fort Ritchie and Redstone Arsenal, gave positive comments. Redstone Arsenal stated that "the ISR

generated sustainment costs supportive of their needs". Fort Ritchie commented that "the system provides a reasonably accurate basis for costing and resourcing decisions at the MACOM and DA levels". The remaining seven out of nine installations clearly surfaced an uneasiness and suspicion of costs and their use in decision making. CEAC conducted an interview with each of the seven installations that expressed concerns with the ISR cost estimates. The purpose of the interviews was to clarify installation comments and ascertain whether these comments require changes to the ISR cost factors. The interviews produced the following specific cost related comments from installations:

(1) We think the ISR cost reports are suspect because the sustainment cost factor produced lower family housing values than what we spent in the past. MCA dollars looked unreal or high to our boss. We think our requirement's database may have been too high. We did not know how to adjust RPLANS.

(2) The ISR did not calculate sufficient new construction costs because the edit routine for RPLANS would not let us adjust for higher requirements. We also think our renovation cost factor was too low because of the new "2 plus 2" standards. Two plus two requires significantly more repair than what's reflected in our older 1391 database.

(3) The cost reports seem higher than actual because the standards represent a Class 1 troop installation and not a DBOF installation. The ISR standards would steer us to fix items on which we would never spend money. For example, the ISR standards require fresh paint for the inside of a tank repair facility. We would not spend the money for this even if you gave it to us. As a result of the first test of Part I, we recommended different standards for DBOF installations. Although the ISR decision makers denied our recommendation, revised standards for the second test of Part I better reflect our installation. Some requirements in the facility standards still generate costs for repairs we would not fund.

(4) We do not support the funding amounts shown in the ISR reports because they do not reflect our requirements. The renovation and sustainment cost factors were in the ball park, but new construction was too high. Since we did not know how the cost factors and the square footage requirements work in the software, we could not validate to see what caused the high figures.

(5) Our funding levels are higher than the ISR cost reports. We believe the reason is the age of our facilities and the high utilization (number of people using the facilities) as compared to other installations. The ISR cost factors should include age and utilization rates to better calculate costs. If the ISR report supports funding distribution decisions about installations, we believe there should be a bridge of understanding between the purpose of the ISR and the executors.

(6) The lack of confidence we have with the ISR cost reports stems from comparison with our MACOM funding guidance. The ISR funding is a lot higher. We believe the reason ISR cost reports are higher than actual funding lies with the standards.

The standards deal with more "eye wash" than functionality. In addition, the cost factors don't break out K and L accounts to support appropriation analysis.

(7) We believe the ISR reports are not useful for higher level decisions because the standards do not reflect AMC MSC installations. Our installation had lower C-ratings because we did not have training ranges or ammo facilities. We do not believe the ISR standards fairly reflect DBOF or research development installations.

7.3. Cost Issues for Future Consideration. An evaluation of installation memoranda and interview comments cited above produced some cost issues for further consideration.

(1) Do we need cost factors at the installation level? The field is clearly uneasy with HQDA utilization of the ISR cost report information. For example, the field wonders if the ISR would support decisions like funding distribution, comparisons of missions at different installations, or making BRAC decisions. The field thinks the cost factors should be at the installation level if HQDA utilizes it for other than costing requirements to build a POM/budget. The biggest draw back to cost factors at the installation level, given the current accounting system and lack of a standard taxonomy, is high cost. Currently we develop and maintain three Part I cost factors by FCG (195) for a total of 975 (195 x 5). The number five comes from the need to have two sets for both renovation and sustainment. A shift to installation level will increase the number of cost factors to approximately 7,000 to 8,000. In the absence of an accounting system with a standard installation taxonomy, the development and sustainment costs of a data feeder system to support the cost factors are too high to justify the benefits.

(2) Do we need to adjust cost factors for policy changes? The shift to "2 plus 2" barracks standards is an example of a policy change that limits the use of historical data for cost factors. A procedure to adjust cost factors for policy changes would improve ISR costing. Using 2 plus 2 standards as an example, the procedure would require cost factor adjustments prior to each field assessment.

(3) Should we adjust cost factors for DBOF and AMC Research and Development installations? Field comments express concerns with ISR standards and request adjustments to better reflect their installations. Another way of compensating for the difference in installations is having cost factors at the MACOM level. Similar to OPTEMPO differences, cost factors at MACOM level will capture installation differences based on mission and management styles.

(4) Should we more clearly narrow the purpose of the ISR? The purpose of ISR is to cost Army installation requirements to support POM and budget development/justification. The field has expanded the ISR to every decision. To improve ISR acceptance, we need to build a bridge of understanding of the uses for the ISR.

(5) Should we adjust cost factors for utilization? The ISR cost factors are Army-wide and don't include utilization. Army-wide cost factors capture total dollar

requirements. Some installations will exceed the Army wide average while others will fall below. For HQDA purposes, the ISR should capture total costs. Utilization is an execution decision. Once OSD and Congress approve the Army's budget request, the MACOM resource managers make the funding distribution decisions. The installations with higher utilization would reflect that fact in prior spending patterns and get a larger share of the funds or an amount above the Army-wide average.

(6) Should we identify cost factors by BASOPS letter account? To better link the ISR to the PPBES system the cost factors will have to go to BASOPS letter account. CEAC recommends we do this in conjunction with the development of Part III Services of the ISR. The advantage of developing BASOPS linkage with Part III is a clearer link to appropriations and a reduced risk of double counting.

7.4. Survey Question Analysis. CEAC evaluated these feedback survey questions regarding the usefulness of ISR cost data for HQDA analysis:

(1) Will estimated sustainment costs be accurate enough for macro-analysis? Yes, the sustainment cost factor is useful as a forecasting tool at the Army wide level. The ISR cost factors do not support decision making at an installation level.

(2) Will estimated renovation costs be accurate enough for macro-analysis? The renovation cost factor is useful as a forecasting tool at the Army wide level. A clearer distinction between OMA K and L and MILCON would support appropriation analysis.

(3) Will estimated new construction costs be accurate enough for macro-analysis? The new construction cost factor is useful as a forecasting tool at the Army-wide level. Field comments regarding high construction costs stem from unconstrained requirements rather than costs factors.

(4) Will appropriation data be in enough detail to support HQDA & MACOM budget/programming processes? Yes, appropriation data are available for experienced analysts at HQDA and MACOMs. It is difficult to tie renovation and sustainment to BASOPS K and L accounts. This condition will get worst as we move toward Part III Services. As stated above, ISR cost factors must go to BASOPS letter account level to support appropriation analysis.

8. Part I Software

For the most part, the software for the expanded ISR test was well received and proved user-friendly for Part I. A number of "bugs" were found during conduct of the test. Most of those were minor and a working solution could be devised to proceed with the ISR test undisrupted and with little or no data degradation.

The ISR development team aggregated all participants' comments and recommendations and researched the magnitude of required and suggested changes with a view toward

fielding. All of the "bugs" will be corrected before the ISR first fielding. The remaining improvements and enhancements, which can be found in Appendix F, have been separated into two groups:

(1) Those which are candidates for incorporation into the software before first fielding.

(2) Those which must be further researched for feasibility or which may involve policy in decisions; those which are too costly or not timely for incorporation in the fielding (not required); and those which are not feasible or which are more logically handled outside the scope of the software itself.

8.1. Major Item Software Revisions. These are the main items which need software / database revisions based on feedback from the second field test:

- (1) Weighting of C-ratings at FCG level;
- (2) Edit capability of facility data after a color rating is entered;
- (3) UIC data pull from installation data bases;
- (4) Visibility of funded construction dollars in Appropriations Reports;
- (5) Additional Utility Systems sub-categories;
- (6) Accommodation of 801 & 802 housing into Housing quantity C-ratings;
- (7) Maneuver area data pull to display acres as unit of measure; and
- (8) Training Range category code restructuring.

8.2. Test Feedback on Software. The ISR feedback surveys and validation visits led to the following conclusions regarding use of the ISR software:

(1) Part I was very user friendly. Part II software did not fare as well, apparently due to the inability of the Query to pull all of the required information from the 1383 data base, and from the way the data entry screen would not let you back out of the screen until all of the required data was entered.

(2) Most of the 23 installations edited their facility inventory data bases to reflect differences between the data supplied from RPLANS and that currently available at the installation. Because of the time delay in posting changes to asset data bases, the data supplied in the second test was from the September 1993 IFS update.

(3) Few installations used the capability to edit facility requirements for specific FCGs. Installation ISR POCs were reluctant to change requirements unless they went

through proper channels on the installation to approve a change. One FCG for which requirements were changed extensively was the Child Care facility requirement. Many installations believed this requirement was overstated and did not take into account alternate sources of care. Those installations that changed this requirement did so to alter an erroneous quantity C-rating calculation.

(4) UICs did not appear in most of the data pulled for the installations, primarily because they did not pass the screen which required that they appear in the ASIP.

(5) Reports were generally clear and easy to use. The appropriation and other cost reports were suspect because of the dollar amounts they produced in contrast to what was expected.

8.3. Software "Bugs" Uncovered. These "bugs" were discovered during this field test and will be corrected before first CONUS fielding:

(1) When a facility is added to the ISR data base in an FCG which had zero assets, the asset amount used to calculate the C-rating is not changed.

(2) In some unique combination of assets, some FCGs are reported in the wrong Sub-Category. Overall calculations are correct, but this is confusing on the reports.

(3) Reports that are rerun immediately after some edits are made do not reflect the effect of these edits.

(4) The edit that allows changing an FCG does not change the corresponding assets used to calculate the C-ratings for the old FCG and the new (changed) FCG.

(5) When a color inspection rating is changed in the data base, the new C-rating is calculated based on the original inspection color instead of the new color.

(6) The export feature does not pull all of the required data files.

(7) The Renovation reports do not reflect costs for facilities that are not on the parent installation (Fort Campbell lost 50% of its renovation cost because of this bug).

(8) The percentage spread, used in the Appropriation Report, does not allow a zero percentage to be entered in the first year.

(9) The calculation of renovation dollars to C-2 is not always correct. In some cases it costs more to raise a facility to C-2 then it does to raise the same facility to C-1.

(10) The merge function will not merge sub-installations, only facilities with the parent (or community) installation number.

(11) The merge function will allow old records that are not in the current data base to be merged into the data files.

(12) The inspection worksheet for Railroads in the FORMS program does not match the sheet in the standards booklet.

8.4 Software Improvements Being Analyzed. Appendix F contains a detailed list of revisions or improvements which are candidates for incorporation into the ISR software for the first CONUS fielding.

9. Part II - Environment Field Test.

9.1. General. The expanded test of the ISR included the first test of the Part II - Environment status report. The purpose of Part II is to provide a macro-level status of environmental conditions on installations evaluated against an Army-wide set of standards. The Office of the Director of Environmental Programs (ODEP) in the ACSIM, in conjunction with the Army Environmental Center (AEC), developed the original standards modeled on the Environmental Compliance and Assessment System (ECAS). These standards were staffed with the MACOMs and installations involved in the first field test of Part I. Based on their input, the standards were significantly revised and sent out for test during this expanded field test.

Some installations voiced concerns with the standards sent out for testing. In general, the concerns raised were:

(1) The standards and evaluation criteria do not present an accurate picture of the environmental conditions and programs on an installation.

(2) The standards focus too much on assessing program management issues rather than the status of environmental conditions.

(3) The evaluation criteria and C-rating measures do not account for ongoing program/project improvements that will correct environmental problems.

(4) The ISR evaluation of an installation's environmental funding status was not in consonance with the Army's 1383 environmental funding document.

(5) The ISR evaluation should better use existing environmental assessment results, such as ECAS and the Army's Compliance Tracking System (ACTS), in the evaluation process.

This feedback prompted a revision of the ISR Part II standards. The OASA(FM) and ACSIM jointly sponsored a Part II standards workshop in May 1994 at the AEC. Representatives from seven of the test installations and three of the test MACOMs met with people from AEC, ACSIM and ORCEN who helped develop the Part II test package. The purpose was to develop an assessment system that would better reflect the true environmental status of an installation. The Part II standards and evaluation measures were revised and sent back out to the test installations for re-testing.

9.2. **Part II Test Data.** Table 9.1 below summarizes the C-rating data reported by the test installations using the standards revised during the workshop held at the AEC.

	Compliance	Conservation	Pollution Prevention	Restoration	Program Management
MDW					
FT RITCHIE	C-1	C-3	C-3	C-1	C-1
FT BELVOIR	C-2	C-3	C-4	N/A	C-3
FORSCOM					
FT CARSON	C-2	C-3	C-2	C-2	C-3
FT STEWART	C-3	C-3	C-4	C-3	C-3
FT RILEY	C-3	C-4	C-4	C-2	C-3
FT CAMPBELL	C-3	C-3	C-4	C-3	C-4
FT DRUM	C-2	C-3	C-3	C-1	C-2
FT BRAGG	C-3	C-3	C-4	C-4	C-3
FT HOOD	C-3	C-3	C-3	C-1	C-3
FT LEWIS	C-3	C-3	C-3	C-3	C-3
USARPAC					
Ft Richardson	C-3	C-4	C-4	C-1	C-3
Schofield Bks.	C-4	C-4	C-4	C-1	C-3
AMC					
ANNISTON	C-1	C-1	C-1	C-1	C-2
REDSTONE	C-3	C-3	C-3	C-1	C-3
ROCK ISLAND	C-2	C-3	C-3	C-1	C-3
ABERDEEN	C-3	C-3	C-3	C-1	C-3
NATICK	C-1	C-2	C-2	C-1	C-1
TRADOC					
FT BENNING	C-3	C-4	C-3	C-2	C-3
FT GORDON	C-3	C-3	C-3	C-1	C-3
FT KNOX	C-3	C-4	C-4	C-3	C-3
FT SILL	C-1	C-3	C-3	C-1	C-3
Carlisle Bks.	C-3	C-1	C-4	C-1	C-1
FT EUSTIS	C-3	C-3	C-3	C-1	C-3
MTMC					
BAYONNE	C-1	C-1	C-2	C-1	C-3
HSC					
FT DETRICK	C-1	C-3	C-4	C-1	C-2

Table 9.1 - Test Reported Part II Area C-Ratings

9.3. Analysis of Part II Test Data. Analysis of the installation Part II test submissions yields the overall results discussed below. **Care should be taken not to over-react to possible installation level problem areas since the Part II - Environment standards are still being reviewed and ratings derived from them may not accurately represent the actual state of the installation's environmental program.** Even if the results for the ISR test installations are correct, they may not be representative of other installations, and care must also be exercised in attempting to generalize results throughout a specific MACOM or to the CONUS Army as a whole.

9.3.1. C-Rating Algorithm Problems. The analysis of test data was at first hampered by the fact that the break-point between C-3 and C-4 was not defined clearly enough (C-3 when less than 50 percent Red ratings and C-4 when more than 50 percent, but the rating when Reds were exactly 50 percent was not defined). For analysis purposes, C-4 was assigned to any Area where exactly half of the Categories were Red.

9.3.2. Environmental Areas of Concern.

(1) Problems are indicated at Schofield Barracks (three of five areas rated C-4) and at these installations, each with two of five areas rated C-4; Fort Riley, Fort Campbell, Fort Bragg, Fort Richardson and Fort Knox.

(2) The Pollution Prevention Area is cause for concern since 10 installations reported C-4. The categories of Solid Waste Reduction and Recycling and Toxic Release and Hazardous Waste Reduction had a significant number of installations reported as Red. If these are correct, there appears to be a generally Army-wide (less AMC) problem with Pollution Prevention.

(3) The Conservation Area had five installation C-4 ratings. The categories of Threatened and Endangered Species Management and Land Management have a number of installations reported as Red.

(4) Only one installation reported a C-4 rating in the Restoration Area while 16 reported C-1. The Army appears to be in good shape in this area.

9.4. Post Test Results. Due to the concerns voiced by some of the test installations and MACOMs, the Army Chief of Staff directed OASA(FM) and ORCEN to revise Part II of the ISR before fielding it as an Army-wide assessment system.

10. Major Test Issues

This list captures the major issues, and recommended solutions, that emerged from the analysis of the Part I test results. These were presented as working issues during the video teleconference after action reviews on 8 and 15 June 94. Some of these issues were also presented to the Army leadership during the post-test decision briefing

process. Some of these recommended solutions are long term fixes that may take considerable time to fully incorporate into the ISR.

10.1. C-Ratings: The simple averaging process does not account for the relative size (and, in many cases, the relative importance) of facility types.

Recommendation: Establish a weighting scheme in the software that accounts for relative asset size using plant replacement value at the FCG level. Ratings from sub-category through area level would be weighted in some manner by relative asset size. Also, ISR reports will show both quality and quantity C-ratings from FCG through area level.

10.2. Implementing Instructions: The ISR instructions can/will be improved in these ways:

Recommendation: ISR instructions will provide more detailed instructions on the operational aspects of implementing the ISR. Installations will be informed to scrub real property inventory and facility requirements early in the ISR process. The instructions will better key them into using the ISR Facilities On-hand / Requirements report as an indicator of the accuracy of their real property data in the ISR software. The instructions will be improved for completing the appropriations reports. Finally, sending everything, i.e. instructions, software, videos, together in one package to installations will help organize the process.

10.3. Inspection Process: These changes will help improve the consistency / quality of facility inspections:

Recommendation: The format of the inspection worksheet will incorporate instructions on determining the overall facility color rating. The "N/A" will be removed as an overall facility color rating choice.

10.4. Database / RPLANS Concerns: Some problems with the database feeders to the ISR program cause inaccurate C-ratings to be generated within certain ISR areas.

Recommendations:

(1) The CATCODE structure for training ranges needs to be updated to better capture the range capabilities at installations. Also, the RPLANS algorithms for training range requirements need to be revised and staffed with the ODCSOPS.

(2) The RPLANS algorithms for Child Development Centers and Maneuver Areas need to be updated.

(3) The FCG to ISR sub-category structuring of the Utility systems area is being scrutinized to determine if more sub-categories are needed to better delineate between types of utility systems.

(4) The overall accuracy of the ISR data will be improved by synchronizing the ISR cycle with updates to the ASIP, IFS-M and DRREAL databases. Also, to help installations in the inspection process, future updates of the IFSM will require assigning UICs to facilities.

(5) In general, the Army needs to further educate installations on the facility requirements reporting process.

10.5. Standards: Some of the facility standards need to be improved based on field test feedback.

Recommendations:

(1) Standards improvements should focus on these categories of facilities:

- * Training ranges
- * Utility systems
- * Airfields - need to incorporate equipment, e.g. NAVAIDS
- * Child Development Centers (incorporate facility standards)
- * Information Management
- * Outdoor Sports and Recreation facilities (currently too generic

and apply to too many different type facilities)

(2) The standards for Army Education facilities should differ from standards for dependent school facilities.

(3) The handicap access criteria should apply only to facilities used by civilians.

(4) Instructions will emphasize that standards are written for layman use, not to be used as a technical inspection.

10.6. Workload Issue: The ISR is manpower intensive to prepare, particularly at large installations with thousands of facilities.

Recommendations:

(1) The Army leadership directed that these current facility-related reports be phased-out and replaced by the ISR:

- (a) The Unconstrained Requirements Report (URR);
- (b) The Installation Commander's Annual Real Property Utilization Survey (ICARPUS);
- (c) The Backlog of Maintenance and Repair report (BMAR);
- (d) The Deferred Maintenance and Repair report (DMAR);
- (e) The Triennial facility inspection requirement.

(2) The Vice Chief of Staff, Army, directed the Director of the Army Staff to scrub other reporting systems to determine if the need for any other current reports was fulfilled by the ISR.

The workload required to prepare the ISR should be reduced over time as installations become familiar with the process.

10.7. Cost Reports: The ISR cost estimates overstate and understate current installation and MACOM resource documents.

Solutions: The cost factors will be continually updated as the ISR evolves. As more data becomes available over time, cost factors can be adjusted to improve accuracy. However, the Army will have to be educated on how to use these cost estimates. The ISR will provide, for the first time, *a consistent estimate of the resource requirements to sustain and improve facilities and installations*. These estimates will be used (at HQDA level) in comparing resource plans during the Program Operating Memorandum (POM) building process.

11. ISR Value Added Analysis.

11.1. General. Results of the initial field test were sent to the various sections of the HQDA staff and to the test MACOM staffs to determine the value added of the ISR to current decision processes. Results of this expanded field test were also staffed so the HQDA/MACOM staffs could evaluate the improvements to the ISR. Specifically, the HQDA and MACOM staffs were tasked to evaluate the following:

1. The value of the ISR data;
2. How the staff element would specifically use the ISR data;
3. What current reports could be eliminated if the ISR was an Army-wide reporting requirement.

11.2. Summary of Value Added Analysis. The various staff elements provided excellent feedback on the utility of the ISR. These are the consensus comments from both the HQDA and MACOM staffs regarding the potential value added of the ISR:

- (1) The ISR now gives a *Commander's overview* of the status of facility conditions on an installation;
- (2) The ISR data provides an assessment of conditions now measured against a common set of standards, thus "leveling the playing field".
- (3) The ISR will help highlight key, systemic problem areas so that the leadership can focus resources to the areas of most need.
- (4) The ISR will aid decision makers in stationing analysis.
- (5) The ISR will better help the DA staff to meet the requirements of the Chief Financial Officer's (CFO) Act. Also, the ISR process is in keeping with the guidelines of the National Performance Review and the Government Performance Review Act.
- (6) The ISR will eventually help the Army defend resource requirements for its installations to the Defense Department and Congress since these resource requirements are generated using a standard system.

11.3. HQDA Staff Comments. Table 11.1 provides a summary of the specific comments from the HQDA staff regarding ISR value added:

HQDA	ISR VALUE:	USES FOR ISR:	REPORTS TO BE ELIMINATED
OASA(FM) SAFM-FO	<p>(1) Clearly has the potential to greatly improve the resourcing and management of Army installations.</p> <p>(2) Provide an excellent source of input for reporting on mission accomplishment at the HQDA level.</p> <p>(3) Improve financial statement reporting for the facilities and environmental components of installation management. (Installation management is one of the Army missions reported in the annual financial statements required by the Chief Financial Officers (CFO) Act).</p> <p>(4) Provide an improved framework for Army implementation of the Government Performance Results Act (GPRA).</p> <p>(5) Support the principles of GPRA and the National Performance Review (linkage of data to installation mission, simplifying the reporting process and making it more relevant, and empowering the Installation Commanders).</p>	Explore its value as a tool for outcome-oriented resourcing and performance measurement.	None.

Table 11.1 - HQDA Staff Comments on Value Added

HQDA	ISR VALUE:	USES FOR ISR:	REPORTS TO BE ELIMINATED
SAFM-BU	<p>(1) Be useful to functional program managers in defining and justifying their financial support requirements.</p> <p>(2) Show the status of facilities in much greater detail than currently.</p> <p>(3) Provide a much better tool for making facility and housing investment decisions rather than relying solely on the traditional 1.75% of plant replacement value (current goal in The Army Plan).</p> <p>(4) Generally provide a better tool for HQDA use in prioritizing installation requirements and allocating resources according to identified needs.</p> <p>(5) Enhance the process for estimating Backlog of Maintenance and Repair (BMAR) requirements.</p>	<p>(1) Conduct independent "order of magnitude" comparisons to determine where the greatest need exists for facilities investment by location and/or type of facility.</p> <p>(2) Possibly provide an additional source of information for justifying and defending MCA/AFH budget requests to OSD.</p> <p>(3) Possibly evaluate/validate MACOM priorities for facilities investment programming and budgeting by the Construction Requirements Review Committee (CRRC).</p> <p><i>* (4) Primary use would be in reviewing individual projects in the budget, by checking the condition of individual facility categories at an installation. The data might also be useful in defending a project whose requirement OSD has questioned.</i></p>	<p>(1) Unconstrained Requirements Report (URR) established by AR 420-16, Facility Engineering Reports.</p> <p>(2) Army Compliance Tracking System (ACTS) report.</p> <p>(3) Environmental Compliance Assessment System (ECAS) report.</p>
SAFM-CA	<p>(1) Has great potential for allowing senior Army leadership to see the condition of installations in both a quantitative and qualitative way.</p> <p>(2) Improve the quality of databases maintained in the field, thereby improving cost estimates for other studies and processes.</p>	<p>Include ISR cost data in a variety of other studies involving force structure or stationing. Current primary tool is the Force Structure/Organization Cost Estimating System which contains cost data on manpower, equipment, and installations.</p>	None

Table 11.1 - HQDA Staff Comments on Value Added

HQDA	ISR VALUE:	USES FOR ISR:	REPORTS TO BE ELIMINATED
OASA(IL&E)	<p>(1) Provide a systemic and standardized process for evaluating the most critical operations at our installations.</p> <p>(2) Have great utility in comparing the availability and quality of facilities, the environment, and services across Army installations.</p> <p>(3) Improve the accuracy of the real property database in IFS-M and assist decision makers in stationing and realignment decisions.</p> <p>(4) Transform installation management from basically a staff/engineering function to a command responsibility.</p>	<p>(1) Support decisions on installation funding to develop POM;</p> <p>(2) Justify Army BASOPS budget requests to OSD and Congress;</p> <p>(3) Allocate funds to MACOMs for BASOPS;</p> <p>(4) Review program execution at the MACOM and installation level;</p> <p>(5) Review impact of funds allocated for specific purposes; and</p> <p>(6) Determine if the funds were appropriately used and produced the anticipated results (long term).</p>	None.
ODISC4	Assist in improving our information handling capabilities over the Army's sustaining base.	<p>(1) Provide the information we need, in convenient format, to determine where the Army resources can best be expended to meet Army information mission area (IMA) sustaining base requirements.</p> <p>(2) Drive allocation of resources to the Army.</p> <p>(3) Verify installation telecommunication status.</p> <p>(4) Determine if modernization and sustainment projects actually solved readiness problems.</p>	Could potentially replace MACOM input to the annual USAISC telecommunication functional assessment of CONUS installations. (Criteria for the USAISC assessment and the ISR Information Management Worksheet are the same.)

Table 11.1 - HQDA Staff Comments on Value Added

HQDA	ISR VALUE:	USES FOR ISR:	REPORTS TO BE ELIMINATED
ODCSLOG	<p>(1) Provide a necessary tool.</p> <p>(2) Provide information that has been formulated in the same manner and uses the same criteria.</p>	<p>(1) Assist the DCSLOG with the planning, development, and prioritization of logistics missions and functions in the POM.</p> <p>(2) Flag areas of concern and readiness deficiencies.</p> <p>(3) Provide resource management data for the decision makers that allocate resources and/or plan deployments.</p> <p>(4) Assist DCSLOG with decisions affecting BRAC and consolidation actions.</p> <p>(5) Develop strategic planning for deployments.</p>	None.
DPAE	<p>(1) Have the potential to be a valuable tool in the POM process.</p> <p>(2) Be a welcome addition to the process and greatly assist the Army's leadership in making the tough decisions on sustaining and improving the Army's facilities and infrastructure.</p> <p><i>* (3) The ISR will help provide the conduit of information and feedback to better support the decision making process involved in building the Army's POM.</i></p>	<p>(1) Provide a comprehensive picture of the condition of the Army's infrastructure.</p> <p>(2) Provide a consistent estimate of the resources required to sustain and improve our facilities and installations.</p> <p>(3) Provide HQDA with a visible means of measuring impact from resource shortfalls.</p> <p>(4) Prioritize and allocate resources during the POM build (by Program Evaluation Groups (PEGs) in their functional areas).</p> <p>(5) Provide PEG with a better snapshot of the requirement out at the installations.</p>	None.

Table 11.1 - HQDA Staff Comments on Value Added

HQDA	ISR VALUE:	USES FOR ISR:	REPORTS TO BE ELIMINATED
ODCSOPS	Enhance the quality and confidence of our decision making process.	<p>(1) Help make relocation and realignment decisions based on installation operational capabilities.</p> <p>(2) Assist in making value judgments on prioritizing installation projects.</p> <p>(3) Enhance the decision making processes for implementing and monitoring the Integrated Training Area Management (ITAM) and Range and Training Land Program.</p> <p>(4) Evaluate an installation's power projection capability (strategic mobility data).</p> <p>(5) Determine the Start Mob budget requirements (strategic mobility data).</p> <p>(6) Prioritize Army installation requirements among all Army requirements.</p> <p><i>* (7) Data will be used to obtain a view of facilities and known shortfalls prior to initiation of stationing action. It will also help define the magnitude of the shortfalls in given mission areas to individuals normally not cognizant of them.</i></p>	None.

Table 11.1 - HQDA Staff Comments on Value Added

HQDA	ISR VALUE:	USES FOR ISR:	REPORTS TO BE ELIMINATED
OACSIM	<p>(1) Provides a standard measure of facility condition or "quality". This missing piece of information hampers our ability to provide a complete assessment of the facilities implications of any proposed action. Without standardized condition data, we are forced to repeatedly contact MACOMs and installations for this information, and are left with data that cannot be compared. This will be a net time and money saver for installations, MACOMs and HQDA.</p> <p>(2) Renovation estimates will be more accurate, and we will have a more complete picture of the ability of excess facilities to accommodate new missions.</p> <p>(3) Provides condition assessments of "areas" that measure an installation's ability to support its current missions. Until now, we had no way of knowing when an installation was "broken" by funding cuts or lack of replacement construction.</p>	<p>(1) Will be a significant component of the analysis of requirements for BRAC construction at gaining locations in that it provides an analytical level of resolution beyond gross requirements.</p> <p>(2) Will provide guidance as a tie-breaker in assessing where the greatest "hurt" is for construction.</p> <p>(3) Will assist in making resource allocation decisions for BCA-funded construction that, to some degree, will be on a consistent basis with construction funded from other appropriations.</p> <p>(4) Will provide condition assessment and buyout costs at the FCG level that gives a much greater precision of analysis for stationing and realignment actions, MILCON validation, lease requirements validation, and utilization studies.</p> <p>(5) Assist in preparation of the Installation Commanders Annual Real Property Utilization Survey (ICARPUS). The ISR is recommended as a method to control and manage facilities use and is especially useful for validating the two-thirds of facilities not physically surveyed in a given year.</p>	<p>(1) The ICARPUS is still a valid requirement under the McKinney Homeless Assistance Act. The ISR will significantly help in preparation of the ICARPUS until the ICARPUS is eliminated as a requirement.</p> <p>(2) Congress mandates that all real property be physically inspected every three years. The ISR inspections will complete this requirement.</p>

Table 11.1 - HQDA Staff Comments on Value Added

HQDA	ISR VALUE:	USES FOR ISR:	REPORTS TO BE ELIMINATED
OACSIM (continued)	(4) Provides the only data source which gives a complete snapshot of an installation's infrastructure.	(6) Will provide key information necessary for the preparation of an effective and implementable Installation Real Property Master Plan. It provides facility condition analysis necessary for planning and programming major maintenance and repair programs or replacement construction. Also provides cost data necessary for analysis of alternatives.	
OACSIM (ODEP)	Brings environmental issues out of purely environmental channels for review by commanders and staffs at all levels.	<p>(1) Simplistically identify environmental problem areas in easily understood terms.</p> <p>(2) Identify environmental trends throughout the Army.</p> <p>(3) Enable decision makers to make decisions about the allocation of resources (dollars and manpower) within environmental programs.</p> <p>(4) Perform the annual internal Environmental Compliance Assessment (ECAS) audit on Army installations as directed by the Deputy Under Secretary of Defense for Environmental Security in Dec 93.</p>	The annual requirement for an internal audit by serving as the annual ECAS report.

Table 11.1 - HQDA Staff Comments on Value Added

HQDA	ISR VALUE:	USES FOR ISR:	REPORTS TO BE ELIMINATED
OACSIM (Resource Integration Office)		<p><i>* C-rating Reports: Data will be used to highlight the need to invest in our facilities and pinpoint where funds should be focused to maintain our forces readiness and improve the soldiers quality of life</i></p> <p><i>Cost Reports: Data may only be used to provide an order of magnitude of the cost required to improve facilities from one C-level to another.</i></p>	
OCAR	There is the potential for added value by standardizing infrastructure information into the ISR format.	Specific uses of the facility assessment data will be better known after a USAR installation/MACOM has completed an ISR.	The ISR may eliminate the need for the BMAR report.

Table 11.1 - HQDA Staff Comments on Value Added

11.4. MACOM Staff Value Added Analysis. Table 11.2 summarizes the comments received from MACOM staffs regarding the value added of the ISR:

MACOM	ISR VALUE:	USES FOR ISR:	REPORTS TO BE ELIMINATED
FORSCOM	<p>(1) Provide the command a consistent record of infrastructure and environmental conditions at all FORSCOM installations.</p> <p>(2) Hopefully provide a consistent and accepted method to demonstrate the real property and environmental operations at our installations.</p> <p>(3) Hopefully assist the MACOMs in distributing funding for installations.</p>	Obtain a consistent FORSCOM-wide evaluation on the condition of installation facilities and infrastructure and the projected cost to maintain and improve these facilities/infrastructure.	<p>(1) Installation Commanders' Annual Real Property Utilization Survey (ICARPUS) as required by AR 405-70.</p> <p>(2) Triennial facilities inspection (real property inventory) as per AR 420-17.</p> <p>(3) The URR.</p> <p>(4) The BMAR.</p> <p>(5) Portions of the Technical Data report (Redbook entries).</p> <p>(6) The ISR may be able to streamline preparation for the Army Community of Excellence visits, especially when the services phase of ISR is completed.</p>

Table 11.2 - MACOM Staff Comments on Value Added

MACOM	ISR VALUE:	USES FOR ISR:	REPORTS TO BE ELIMINATED
TRADOC	(With more refinement) become an additional tool for installation and MACOM managers.	(The Summary C-Ratings) provide the MACOM the ability to compare the installations C-ratings and can be used to prioritize projects in the resourcing process.	(1) The URR (2) BMAR
MTMC	Provide a macro analysis of the installations' infrastructure.	Help determine if a facility should be repaired or completely replaced.	None
HSC (USA MEDCOM(P)	Identify overall facilities and resource trends and needs.	(1) As a commander's tool, especially a new commander not completely in touch with his installation's facility status. (2) (The use of Army-wide standards is extremely useful in) communicating a HQDA definition and vision of facilities excellence especially when customers, not engineers, complete the non-technical evaluations.	None.
USAISC	Provide a snapshot view of supported installations.	Defend requests for upgrades and new services that are addressed in information requirements planning documents and the PPBES.	A red/amber/green assessment for telecommunications systems required by HQDA Memo, SAIS-SDS, 24 Mar 93, subject: Funding strategy for Power Projection C4 Infrastructure (PPC4I).
INSCOM	Valuable management tool from a stationing perspective.	(1) Make important relocation and realignment decisions. (2) Provide emphasis to planning and programming actions needed to upgrade facilities where INSCOM units are tenants.	None.

Table 11.2 - MACOM Staff Comments on Value Added

12. Recommendations to the Army Leadership and Results of ISR Implementation Decision Briefings.

12.1. General. After all ISR reports were submitted, the ISR development team analyzed the results and conducted after action reviews (AARs) with the test installations and MACOMs by teleconference. The purpose of these was to provide an overview of the test results, issues, working solutions and initial conclusions and recommendations for future implementation of the ISR. It was also a forum for installations and MACOMs to share ideas and concerns about the ISR with HQDA and each other. These AARs also provided some ideas for the decision briefings to the Army leadership regarding ISR implementation.

12.2. Conclusions & Recommendations to the Army Leadership. The ISR development team then presented a series of briefings to the Army leadership to inform them of the expanded field test results and to provide recommendations for future implementation.

12.2.1 Conclusions. We presented these conclusions from the expanded field test:

PART I Infrastructure:

(1) Installations, MACOMs and HQDA support Part I of the ISR.

(2) The ISR will fill a valid Army need to link installation conditions, now assessed against a common set of standards, with the resource requirements to improve these conditions. These resource estimates, determined using a standard methodology, will allow Commanders to set priorities in consonance with readiness objectives.

(3) The ISR adds value to decision processes at installation, MACOM and DA level. The value added increases at higher echelons of control.

(4) The ISR has to be a dynamic, evolving process that emphasizes open dialogue among installations, MACOMs and HQDA. Installation and MACOM input must be used to continually improve/refine cost factors, facility standards, database feeder systems and software.

(5) The costs of the ISR in terms of manpower will be mitigated by the elimination of other current reports (URR, BMAR, DMAR, ICARPUS and Triennial Inspection Requirement) and this cost is minimal when compared to the benefits derived from having the ISR.

Part II Environment:

- (1) Part II received mixed support from test installations and MACOMs.
- (2) This part will need continual refinement and we must educate the Army as to its purpose and use.
- (3) Part II provides a consistent estimate based on Army-wide standards.
- (4) Part II will add value to decision processes, however mostly at MACOM and HQDA level.

12.2.2. Recommendations. These recommendations were made to the Army leadership regarding the future of the ISR:

Part I Infrastructure & Part II Environment:

- (1) Approve CONUS wide implementation of the ISR with the first report to be completed in 3rd quarter, FY 95.
- (2) Transfer HQDA responsibility for managing the ISR to the Assistant Chief of Staff for Installation Management.
- (3) Implementation should include periodic, formal evaluations of the usefulness of the ISR to installations, MACOMs and HQDA.

12.3. Summary of Briefing Results. *The Chief of Staff, Army approved CONUS implementation of the ISR, Part I Infrastructure for 3rd quarter, FY95. He directed the Army staff to get rid of those reports already identified for elimination and to look for other reports that can be eliminated by the ISR. The CSA did not approve implementation of Part II Environment. He directed OASA(FM) and ORCEN to do more work on Part II before it becomes an Army-wide system.*

12.3.1. HQDA Executive Steering Committee (ESC) Briefing. The ISR development team first provided an information briefing to the HQDA ESC for the ISR. The ESC voiced concerns regarding the usefulness of the current version of Part II Environment and about the overall linking of ISR results to readiness. They were supportive of implementing Part I.

12.3.2. HQDA Program Budget Committee (PBC). The next briefing was presented to the HQDA PBC. The PBC approved of the results, conclusions and recommendations regarding Part I, however they voiced concerns about Part II. The main concern was how to interpret the C-rating results. For example, does a C-3/4 rating in Compliance mean an installation is not funded for, or taking corrective action on, a Class I environmental problem? Since the current Part II system could lead to a low C-rating even if all Class I deficiencies were corrected/funded, the PBC was concerned with how HQDA, OSD and Congress would interpret Part II C-ratings.

12.3.3. Select Committee (SELCOM). The ISR was then presented to the SELCOM of HQDA staff principals, co-chaired by the Under Secretary of the Army and the Vice Chief of Staff, Army. They approved of forwarding the ISR for an implementation decision to the CSA.

12.3.4. Decision Briefing to the CSA. The decision briefing to the CSA included a round table discussion with several of the key leaders of the installations/MACOMs involved in the expanded field test. Those present from test installations/MACOMs included the Commander, XVIII Airborne Corps and Fort Bragg; Deputy Commander, III Corps and Fort Hood; Commander, Field Artillery Center and Fort Sill; and the Chiefs of Staff from FORSCOM, TRADOC and AMC. The CSA listen to the briefing and input from the test sites and DA staff principals before approving CONUS implementation of Part I and directing refinement of Part II. The CSA's guidance on implementing Part I was for it to be in dialogue with MACOM and installation commanders. He stressed that there was too much disparity in standards among installations. He believed the ISR's use of standards will present an accurate picture of installation conditions and resource needs for infrastructure so large scale decisions about installations could be made with better information. He also stressed that a great benefit of the ISR was getting Commanders together in one room to talk about installations and infrastructure with him, something seldom done before.

APPENDIX A - Statistical Analysis of Validation and Assistance Visit Checklists

This Appendix provides a detailed breakdown of the results of assistance visits made to participating installations during the expanded field test. Each visit team received feedback on the same set of questions in order to determine if there were any trends in installation organization/implementation of the ISR, facility inspection results, and real property management issues. Each question, along with the statistical results, is provided below.

The statistical analysis criteria are as follows: The **Mean** provides the average of the responses for a certain question. The **Median** is the middle response, i.e. 50% of the responses have a higher value than the median value while 50% fall below the median. The **Mode** is the most frequent response. Since the sample size for each question is small (not greater than 23 responses), the mode is the best measure of the overall response to a question. The mean can be skewed by "outliers", and the median does not accurately represent the overall response in which there are several values on both ends of the scale.

Section I - Test Organization.

(1) *What installation staff element has overall responsibility for completing the ISR field test?*

1	2	3	4	5
G-3/DPT (Operations)	DEH/ DPW	DRM (Resource Mgt)	Garrison CDR/ BASOPS Mgr. personal staff	Other (Specify): _____ _____

Mean = 1.78; Median = 2; Mode = 1 (23 responses). Ten installations used the G-3/DPT while 10 used the DPW as the ISR lead. No firm conclusions supporting one office as the appropriate ISR POC can be drawn. The ISR naturally can fall into either directorate, however observation of installations in action revealed that the G-3/DPT normally received better support from facility users and other installation staff elements who contributed to the ISR than did the DPW.

(2) *The Part I-Infrastructure written field test instructions are clear and easy to follow.*

A response of 1 meant yes, a 2 meant no. **Mean, Median and Mode = 1 (23 responses).** Conclusion is that ISR Part I instructions are in good shape. Need to stress to the POC to read them prior to implementing rather than to rely on training tapes or sessions alone.

(3) *The Part II-Environment written field test instructions are clear and easy to follow:* -

Same scale as (2). **Mean = 1.11, Median = Mode = 1 (18 responses).** With 16 yes responses, the Part II instructions are in good shape. However, there were several comments regarding subjectivity and ambiguity in specific standards. This led us to convene a workshop with installation level environmental program managers to improve Part II.

(4) *The installation is using the following approach to facility inspections:*

1	2	3
Centralized team inspections for all facilities	Facility Users for most facilities; Central team for common areas (e.g. Utility Systems)	Other (Specify): _____ _____ _____

Mean = Median = Mode = 2.0 (23 responses). We can conclude that installations use both facility user and centralized teams for inspections. The ISR inspections should push this method as the "best" method. Two installations used only centralized teams, but supplemented that by getting user input during the inspections. Several installations were concerned about the accuracy of facility user inspections so they formed a centralized quality control team to double check some inspections.

(5) *The installation has / will physically inspect the following number of its permanent facilities (do not include family housing units in this % assessment):*

1	2	3	4
Greater than 80%	Between 50 & 80%	Between 30 & 49%	Less than 30%

Mean = 1.14, Median = Mode = 1 (22 responses). Most installations could inspect more than 80% of their permanent facilities through user level inspections. This means the ISR inspection process is "doable". The large test installations (Forts Bragg and Hood) reported inspecting between 50-80% of their permanent facilities. Large installations will require more time to train inspectors, sort and distribute materials, and collect completed inspections.

(6) When using the representative sampling method to inspect some categories of facilities (such as family housing), the installation inspected the following percent of these type facilities:

1	2	3	4
Greater than 30%	Between 20 & 29%	Between 10 & 19%	Less than 10%

Mean = 2.61, Median = Mode = 3 (18 responses). The answers to this question varied across the spectrum. Currently the ISR instructions suggest, but do not dictate, a sample size. Conclusion - specify a sample size.

(7) The ISR training video was helpful in training facility inspectors:

1	2
Yes	No

Mean = 1.09, Median = Mode = 1 (22 responses). Conclusion is that a video is a good tool to assist in training installation POCs and facility inspectors. However, we should consider separating the information into two shorter videos - one as an ISR overview for Installation Commanders and staff, and one focusing solely only the inspection process that includes inspections of three different types of facilities. The current video, which provides both an overview and inspection training, is too long (30 minutes) for training inspectors.

(8) What percent of completed inspection worksheets were turned in with errors in determining the overall facility color rating?

1	2	3	4
Greater than 20%	Between 10 & 19%	Between 5 & 9%	Less than 5%

Mean = 2.78, Median = 3, Mode = 4 (18 responses). These responses varied significantly. Eight installations reported less than 5 % errors while 4 reported greater than 20%. Currently, the worksheet instructions are provided on a separate page in the standards booklet. We may need to incorporate standard instructions directly on the worksheet for determining the majority item, critical item and overall color ratings. Most confusion appears to be with determining the "lowest critical item color rating".

(9) *What percent of facility inspectors had to interrupt their inspections to ask the installation ISR POC for guidance on interpreting and/or applying specific facility standards?*

1	2	3	4
Greater than 30%	Between 20 & 29%	Between 10 & 19%	Less than 10%

Mean = 3.57, Median = Mode = 4 (21 responses). Seventeen installations responded that less than 10% stopped inspections for guidance so the standards appear to be written in a straightforward manner.

(10) *The installation POC is using the USAFISA worksheet to track man hours spent on ISR preparation.*

Half of the installations were using it (or plan to) while half were not. Some found it difficult to use so they were tracking man-hours by some other method. Most will reconstruct the information at the end of the test using the USAFISA worksheet.

(11) *The installation has/plans to aggregate facility quality information using the ISR satellite program (ISRS).*

Only 5 installations were using the ISRS program mainly because the ISR is new and people have not learned everything about the system. Many POCs felt more comfortable doing quality control on the completed worksheets before data entry. Also, the "bugs" of data edits need to be worked out before using the ISRS to merge quality data. After the ISR is established and installations get over the initial learning curve, the ISRS will probably prove to be a timesaving, user-friendly program.

(12) *Does the installation have a plan for pulling together the ISR? (i.e. preparing cost reports, consolidating data, determining infrastructure area priorities, meeting with the Commander, using the data in installation management, etc.)*

All installations had a plan of some kind to pull together the ISR. However, this area needs more emphasis in training and written instructions. The ISR is a cross-functional tool to be used by more than one staff agency. **Hence, the "sanity check" and IPR process needs to be stressed to get more than one installation staff element involved with doing/using the ISR.**

Questions 13 & 14 addressed the cost reports. Because of the timing of site visits, most installations had not prepared these reports so we received responses from less than 50% of the installations to these questions. No data from these questions is conclusive.

Section II - The Inspection Process.

Each team inspected the same subset of five facility types on each installation. The intent was to inspect these facilities using the ISR worksheets and standards booklets and then compare results with those found by the installation. For each type facility, we captured how often both the overall facility ratings and the individual inspection item ratings matched. We hoped to draw some conclusions about the objectivity of the inspection process.

Results: Overall, the visit team inspectors matched the installation-found facility color rating for 64% of the facilities inspected. The visit teams inspected a total of 110 facilities with overall color ratings matching in 70 of these facilities. Based on the checklist, the visit team inspectors matched the individual inspection item color ratings for approximately 73% of the items. The overall facility rating is the important statistic to evaluate since only the overall ratings affect the ISR C-ratings and cost estimates. Below are the aggregate results for each facility type inspected:

Facility Type	% Match of Overall Facility Color Rating	% Match of Inspection Item Color Ratings
Maintenance Facilities	59% (17 of 29)	67%
General Supply & Storage Facilities	74% (20 of 27)	70%
General Purpose Administrative Facilities	56% (14 of 25)	76%
Dining Facilities	64% (9 of 14)	80%
Physical Fitness Centers	67% (10 of 15)	67%

Conclusions. Based on these results we cannot conclude the ISR inspection process is totally objective. Results will vary as long as facility users are performing the inspections. With training and familiarity with the inspection process, results will probably become more consistent across inspectors.

Inspection Process Issues. Generally, facility users tended to rate their facilities lower than an outside inspector (visit team members). The handicap accessibility law has caused some confusion among inspectors. Many older facilities have not been made handicap accessible so the inspectors tend to let this lower the overall facility rating. Since handicap accessibility is only one component of a facility, lack of it should not drive the overall facility rating.

Other issues:

- Limitations on renovating historical facilities needs to be better addressed.
- Check AR 27-10 for legal office requirements as standards.
- Need to consider security and safety criteria in some standards.
- Need to compare the Utility system standards with TRADOC's SUPER system.
- Compare Road network standards to TRADOC's PAVER system.

- Central vehicle wash facility is put in the Sewage Treatment plant FCG so the standards to assess it are incorrect. Put the combat vehicle wash facilities somewhere within the Mission facilities area.

Section III - Real Property Issues.

The questions in this section sought to determine several things; the accuracy of the real property inventory (RPI) and facility requirements downloaded by HQDA into the ISR databases; if installations were using the direct edit capability in the ISR for RPI and requirements; and, if the installations used direct edits, were they following through and submitting RPI and requirements changes through correct channels. Several of the checklist questions were Yes/No responses so the results are summarized.

(1) **RPI.** Almost all the installations did ask their real property managers to validate the accuracy of the ISR RPI. Most (12 of 16) installations did do direct edits of this RPI. To determine the extent of changes, we used the following question:

Real Property inventory changes were required in what percent of Facilities in the database?

1	2	3	4	5
Less than 1%	Between 1 & 2%	Between 2 & 3%	Between 3 & 5%	More than 5%

Mean = 2.19, Median = Mode = 1 (16 responses). Nine of the 16 installations said they changed less than 1% of their RPI database while 3 change more than 5% of the database. General observation was that installations had put varying levels of effort into ensuring they had an accurate RPI database. This was reflected in the number of personnel they had available to work RPI and their level of experience. Most installations (11 of 14) had taken action to submit changes made to the ISR RPI database through current reporting channels.

Conclusions. Many installations appear to be in good shape in terms of RPI database accuracy, however some have significant problems. The ISR has been a mechanism for several installations to discover they have problems in RPI management and provided an impetus for them to correct these shortcomings. Having the direct edit capability did not appear to hinder installations from submitting RPI changes through appropriate channels.

(2) **Requirements.** Only half of the installations asked had thought about how to validate facility requirements. Installations ISR POCs correctly saw that requirements had an impact on the master plan so they were reluctant to change requirements without receiving guidance from higher authority. Most installations had changed a few requirements, such as those for Child Development Centers, in which there were glaring errors driving incorrect C-Ratings. Unfortunately, some installations saw the FARA process as a laborious means to change requirements/allowances.

Facility requirements changes were required in what percent of Facility Category Groups in the ISR database?

1	2	3	4	5
Less than 1%	Between 1 & 2%	Between 2 & 3%	Between 3 & 5%	More than 5%

Mean = 1.69, Median = Mode = 1 (13 responses). Nine of the 13 installations changed requirements in less than 1% of the FCGs in their database. Two installations changed between 3 & 5%. One problem observed from the field regarding the FARA process was how long submitted changes would remain valid. Installations felt that changing ASIPs would require them to continually submit FARA updates. They felt this would be too labor intensive for the value added.

Conclusions. Installations will be reluctant to change facility requirements unless they receive guidance from higher. This is good, however the FARA process will require some education of the field to prove its need/value. Since FARA is new, the installations will have to closely track the FARA-status of any requirements changes they made in the ISR database.

Appendix B - Installation Commander's Part I Feedback Survey Analysis

The Installation Commander's Feedback Survey showed that there is strong support for the idea of using C ratings to describe infrastructure. The same holds true for the use of functional areas within the reports to cover the major types of infrastructure found on most posts. On the other hand, the Installation Commanders do not feel very confident in the costing or resource aspects of the ISR.

To further analyze the results of this survey, the Mean responses to the questions posed are rank ordered below. This rank ordering from the most agreement to the least agreement is shown in the table below. Note that the responses in the surveys were:

1. strongly disagree
2. disagree
3. no opinion
4. agree
5. strongly agree

MEAN	QUESTION
4.19	C ratings are sufficient to describe infrastructure conditions.
4.05	Areas (Mission facilities, Utility systems, etc.) adequately cover the major types of infrastructure.
3.86	The ISR is an effective means for describing the needed improvements to the infrastructure.
3.73	The Commander's cover memo is an appropriate means to indicate the relative importance of Areas.
3.64	The ISR is a useful tool for assessing the conditions of my installation.
3.52	The ISR assists in prioritizing projects and/or programs at installation levels.
3.50	The facility standards are suitable for a broad, non-technical assessment of infrastructure.
3.29	The ISR assists in allocating resources at installation level.
2.81	The ISR effectively estimates resource requirements to correct infrastructure shortcomings.

TABLE 1. Average Scores and Questions

Some specific comments from commanders included:

- a. FORT BENNING: "The (ISR) System needs to interface with other systems such as BMAR and DMAR automatically."
- b. FORT GORDON: "There are no current means for the ISR to accurately reflect the resource demands due to changing missions, facility reductions, utility divestiture, energy conservation requirements and most importantly recurring annual maintenance funding shortfalls."

c. FORT SILL: "Have definite concerns regarding the current resource estimates depicted in the appropriations reports. Would like more definition of cost factors and how they were developed."

d. FORT CAMPBELL: "Information contained in this report will be used to prioritize funds, space utilization and new construction requirements."

e. FORT BRAGG: "Insure IFS-M and RPLANS data is accurate and reconciled at all levels (DA-MACOM-Installation) prior to fielding the ISR."

"Utility systems need to be divided into zones."

f. FORT STEWART: "The installation has the capability to give a more realistic estimate or should be allowed to modify it so every Headquarters Commander can obtain a better understanding of the magnitude of the problem."

"Our review of resources data indicates the ISR is low in sustainment and high in new construction costs. Resource management through the ISR is an unproved area which deserves further refinement."

f. FORT HOOD: "Add capability to make local costs adjustments."

"I do not anticipate using the ISR as a prioritization tool."

Appendix C - Installation Points of Contact Survey Analysis

The installation points of contact (POC's) also completed a survey. This survey was comprised of 49 questions broken down into three major groups. The groups of questions were: Classification of Infrastructure, Facility Standards, and Other Aspects of the ISR. The responses were similar to the commander's survey except we included the "not applicable" option for some questions. To avoid any incorrect weighting of "Not applicable" we left these answers as blank in the spreadsheet analysis.

1. strongly disagree
2. disagree
3. no opinion
4. agree
5. strongly agree
6. not applicable

Section I - Classification of Infrastructure

There were 6 questions about classification of infrastructure in the ISR. Most of the POC's agreed that the areas included on the ISR (Mission Facilities, Strategic Mobility Facilities, Housing, Community Facilities, Utility Systems, Army Reserve Facilities, and National Guard Facilities) adequately cover major types of infrastructure on installations.

The Installation POC's answered specific questions regarding each one of the categories. Overall these categories appear to be acceptable. Some of the specific comments concerning categories are as follows:

- a. FORT BELVOIR: "Airfield equipment still needs to be added."
- b. FORT HOOD: "Unit Operations buildings should be a separate category."

Section II - Facility Standards

There were 26 questions about facility standards used by the ISR.

The question scoring the highest mark asked: *"The facility requirements and assets data edit process is needed for the ISR to accurately portray infrastructure conditions on installations."* Respondents were in strong agreement that a C-rating system of C1 through C5 is sufficient to describe infrastructure conditions at installations, given satisfactory facility standards and algorithms. Also they agreed that the worksheets for recording facility quality ratings using green, amber, and red were helpful and relatively easy to use; and that the ISR software is user-friendly.

The three questions scoring the lowest marks were related to costs. It is apparent that the cost functions are not well understood. The facility standards with apparent problems are in the Training Ranges and Areas, Ports, and Electric categories

Some of the specific responses concerning facility standards are as follows:

- a. FORT CAMPBELL: "Need specific inspection criteria for specific ranges."
- b. FORT BRAGG: "Education facilities should be listed as a category by themselves because of their unique mission and importance to individual development in community facilities."
- c. FORT HOOD: "Sub-categories should be weighted (based on asset quantities) when averaging the C-rating for a category."
- d. FORT BELVOIR: "Airfield equipment needs to be added (radar, radio beacons, etc.).
"Heat and Air conditioning should have a separate checklist."
- e. FORT STEWART: "Need clearer explanation of classroom function. Separate MTOE unit classrooms from general education classroom, such as high school/college facilities."

Section III - Other Aspects of the ISR

There were 15 questions about other aspects of the ISR. These questions concerned the C-ratings and the algorithms used within the ISR program. They also asked about costs used in the ISR.

The POC's felt strongly that a facility requirements and assets data edit process is needed for the ISR to accurately portray infrastructure conditions on installations. They also agreed that the worksheets for recording facility quality ratings of green, amber, and red were helpful and relatively easy to use. Finally, the POC's agreed with the commanders that a C-rating system is sufficient to describe infrastructure conditions at installations. On the other hand, the POC's looked unfavorably at the cost aspects of the ISR.

Some of the specific answers from this section of the survey were as follows:

- a. FORT DRUM: "Quantity ratings still seem to be the ruling factor."
- b. FORT RILEY: "Cost reports should reflect appropriation/BAG by each individual category. Without this we cannot tell what appropriations are tied to costs."
- c. SCHOFIELD BARRACKS: "Cost of maintenance and repair is understated."
- d. ANNISTON: "ISR will give the Commander a general idea of where funds are needed but not specific allocations."
- e. FORT EUSTIS: "The process should not end with this report being forwarded. The results need to be integrated into other engineer systems."

FOR TEST PURPOSES ONLY

APPENDIX D - Category and Sub-Category C-Ratings Reported During Expanded Field Test

MISSION FACILITIES AREA MACOMs: MDW, MTMC, HSC

Category / Sub-Category	Ft Ritchie	Ft Belvoir	Bayonne	Ft Detrick
AREA C-RATING	C-3*	C-3	C-2	C-2*
Category: Training Ranges & Areas				
Individual Weapon Qual. Ranges	C-4	C-4	C-2	N/A
Major Weapon System Ranges	N/A	C-4	N/A	N/A
Maneuver areas	C-4	C-4	N/A	N/A
Category: Maintenance & Production Facilities				
Maintenance Facilities	C-3	C-3	C-4	C-3
Production Facilities	N/A	C-3	C-1	C-1
Category: Classrooms				
General Purpose Instruction Fac.	C-3	C-3	C-2	C-4
Applied Instruction Facilities	C-4	C-2	N/A	C-4
Category: Research & Development				
Research & Development Bldg.	N/A	C-2	N/A	C-3
Research & Development Ranges	N/A	C-2	N/A	N/A
Category: Supply & Storage Fac.				
Bulk Fuel Receipt, Issue & Storage Site	C-3	C-3	C-3	C-3
General Supply & Storage Facilities	N/A	N/A	N/A	N/A
Category: Conventional Ammunition Fac.				
Ammunition Storage Facilities	C-4	C-2	N/A	N/A
Ammunition Maintenance Facilities	N/A	N/A	N/A	N/A
Category: Administrative Facilities				
Unit Operations Buildings	C-3	C-2	N/A	C-4
General Purpose Administrative Fac.	C-3	C-3	C-2	C-3
Confinement Facilities	N/A	N/A	N/A	N/A
Category: Information Management				
Information Management	C-2	N/A	C-2	C-1

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MISSION FACILITIES AREA MACOM: FORSCOM

Category / Sub-Category	Fort Carson	Fort Stewart	Fort Riley	Fort Campbell	Fort Drum	Fort Bragg	Fort Hood	Fort Lewis
AREA C-RATING	C-2	C-3	C-2	C-3	C-2*	C-3	C-3	C-3
Cat: Training Ranges & Areas								
Individual Weapon Qual. Rg.	C-2	C-2	C-2	C-2	C-2	C-3	C-3	C-2
Major Weapon System Rgs.	C-2	C-3	C-2	C-3	C-2	C-4	C-2	C-3
Maneuver areas	C-2	C-2	C-1	C-1	C-2	C-2	C-1	N/A
Cat: Maint. & Production Fac.								
Maintenance Facilities	C-1	C-3	C-2	C-3	C-2	C-3	C-3	C-2
Production Facilities	C-4	N/A	C-1	N/A	N/A	C-2	N/A	N/A
Cat: Classrooms								
General Purp. Instruction Fac.	C-4	C-4	C-3	C-4	C-4	C-3	C-4	C-3
Applied Instruction Facilities	C-3	C-3	C-2	C-3	C-4	C-3	C-3	C-3
Cat: Research & Dev. (R&D)								
R&D Buildings	C-1	C-1	N/A	N/A	N/A	C-3	C-2	N/A
R&D Ranges	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cat: Supply & Storage Fac.								
Bulk Fuel Receipt, Issue & Storage Site	C-3	C-3	C-3	C-3	C-2	C-3	C-3	C-3
General Supply & Storage	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cat: Conventional Ammo. Fac.								
Ammunition Storage Fac.	C-1	C-1	C-3	C-2	C-2	C-4	C-2	C-2
Ammo. Maintenance Fac.	N/A	C-1	C-1	N/A	C-1	C-1	C-4	N/A
Cat: Administrative Facilities								
Unit Operations Buildings	C-2	C-3	C-3	C-4	C-2	C-4	C-4	C-3
General Purpose Admin. Fac.	C-2	C-4	C-3	C-4	C-3	C-3	C-2	C-3
Confinement Facilities	C-1	C-4	C-1	C-4	N/A	N/A	C-4	C-3
Cat: Information Management								
Information Management	N/A	C-4	C-1	C-4	C-2	N/A	C-4	C-4

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MISSION FACILITIES AREA MACOM: TRADOC

Category / Sub-Category	Fort Benning	Fort Gordon	Fort Knox	Fort Sill	Carlisle Barracks	Fort Eustis
AREA C-RATING	C-3	C-3	C-3	C-3	C-2	C-4
Cat: Training Ranges & Areas						
Individual Weapon Qual. Rg.	C-2	C-3	C-2	C-3	N/A	C-3
Major Weapon System Rgs.	C-4	C-4	C-2	C-3	N/A	N/A
Maneuver areas	C-4	C-2	C-2	C-4	N/A	C-4
Cat: Maint. & Production Fac.						
Maintenance Facilities	C-3	C-4	C-3	C-3	C-2	C-3
Production Facilities	C-4	C-4	C-4	C-3	C-2	C-4
Cat: Classrooms						
General Purp. Instruction Fac.	C-3	C-2	C-4	C-4	C-2	C-3
Applied Instruction Facilities	C-4	C-3	C-3	C-2	C-1	C-4
Cat: Research & Dev. (R&D)						
R&D Buildings	C-4	C-2	N/A	C-4	C-2	C-4
R&D Ranges	N/A	N/A	N/A	N/A	N/A	N/A
Cat: Supply & Storage Fac.						
Bulk Fuel Receipt, Issue & Storage Site	C-3	C-3	C-3	C-4	C-2	C-3
General Supply & Storage	N/A	N/A	N/A	N/A	N/A	N/A
Cat: Conventional Ammo. Fac.						
Ammunition Storage Fac.	C-3	C-2	C-1	C-2	N/A	C-4
Ammo. Maintenance Fac.	N/A	N/A	N/A	C-4	N/A	N/A
Cat: Administrative Facilities						
Unit Operations Buildings	C-3	C-3	C-3	C-3	C-1	C-3
General Purpose Admin. Fac.	C-3	C-2	C-3	C-3	C-3	C-4
Confinement Facilities	C-2	N/A	C-2	C-2	N/A	N/A
Cat: Information Management						
Information Management	C-3	C-4	C-2	C-3	C-1	C-3

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MISSION FACILITIES AREA MACOM: AMC

Category / Sub-Category	Anniston Army Depot	Redstone Arsenal	Rock Island Arsenal	Aberdeen Proving Grounds	Natick R&D Center
AREA C-RATING	C-2	C-2	C-3	C-3	C-2
Cat: Training Ranges & Areas					
Individual Weapon Qual. Rg.	N/A	C-2	C-4	C-3	N/A
Major Weapon System Rgs.	N/A	N/A	N/A	C-4	N/A
Maneuver areas	N/A	N/A	N/A	C-4	N/A
Cat: Maint. & Production Fac.					
Maintenance Facilities	C-2	C-2	C-3	C-2	C-1
Production Facilities	C-1	C-2	C-2	C-2	N/A
Cat: Classrooms					
General Purp. Instruction Fac.	C-2	C-4	C-2	C-3	C-3
Applied Instruction Facilities	N/A	C-2	C-3	C-3	N/A
Cat: Research & Dev. (R&D)					
R&D Buildings	N/A	C-2	C-3	C-3	C-2
R&D Ranges	N/A	C-2	N/A	C-4	N/A
Cat: Supply & Storage Fac.					
Bulk Fuel Receipt, Issue & Storage Site	C-2	C-3	C-2	C-3	C-3
General Supply & Storage	N/A	N/A	N/A	N/A	N/A
Cat: Conventional Ammo. Fac.					
Ammunition Storage Fac.	C-2	C-2	C-2	C-4	N/A
Ammo. Maintenance Fac.	C-3	C-2	N/A	C-3	N/A
Cat: Administrative Facilities					
Unit Operations Buildings	C-1	C-3	N/A	C-2	C-4
General Purpose Admin. Fac.	C-2	C-3	C-3	C-3	C-1
Confinement Facilities	N/A	N/A	N/A	N/A	N/A
Cat: Information Management					
Information Management	C-2	C-2	C-4	N/A	C-2

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STRATEGIC MOBILITY AREA MACOMs: MDW, MTMC, HSC

Category / Sub-Category	Ft Ritchie	Ft Belvoir	Bayonne	Ft Detrick
AREA C-RATING	C-3*	C-2	C-2	C-2
Category: Road & Trail Network				
Surfaced Roads	C-3	C-2	C-2	C-3
Category: Railroad				
Railroad Track	N/A	C-1	C-1	N/A
Railhead Facilities	C-5	N/A	N/A	N/A
Category: Airfield				
Airfield Facilities	C-4	C-2	N/A	N/A
Airfield Pavements	N/A	C-3	N/A	C-1
Category: Ports				
Piers & Wharfs	N/A	C-2	C-4	N/A
Staging & Marshaling Facilities	N/A	N/A	C-2	N/A
Rail & Truck Operations Areas	C-5	N/A	C-1	N/A
Terminal Intermodal Facilities	C-5	N/A	N/A	N/A

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STRATEGIC MOBILITY AREA MACOM: FORSCOM

Category / Sub-Category	Fort Carson	Fort Stewart	Fort Riley	Fort Campbell	Fort Drum	Fort Bragg	Fort Hood	Fort Lewis
AREA C-RATING	C-2	C-3*	C-2	C-3	C-2	C-2	C-2	C-3
Cat: Road & Trail Network								
Surfaced Roads	C-2	C-2	C-2	C-3	C-2	C-2	C-2	C-3
Cat: Railroad								
Railroad Track	C-1	C-1	C-1	C-4	C-1	C-1	C-1	C-4
Railhead Facilities	N/A	C-4	N/A	N/A	N/A	N/A	C-3	N/A
Cat: Airfield								
Airfield Facilities	C-1	C-3	C-2	C-3	C-1	C-1	C-2	C-2
Airfield Pavements	C-2	C-2	C-2	C-2	C-2	C-2	C-2	C-2
Cat: Ports								
Piers & Wharfs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Staging & Marshaling Facilities	N/A	N/A	N/A	N/A	N/A	C-4	N/A	N/A
Rail & Truck Operations Areas	N/A	C-5	N/A	N/A	N/A	N/A	N/A	N/A
Terminal Intermodal Facilities	N/A	C-5	N/A	N/A	N/A	N/A	N/A	N/A

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STRATEGIC MOBILITY AREA MACOM: TRADOC

Category / Sub-Category	Fort Benning	Fort Gordon	Fort Knox	Fort Sill	Carlisle Barracks	Fort Eustis
AREA C-RATING	C-3	C-2	C-3	C-3*	C-2	C-4*
Cat: Road & Trail Network						
Surfaced Roads	C-2	C-2	C-2	C-3	C-3	C-3
Cat: Railroad						
Railroad Track	C-2	C-2	C-2	C-1	N/A	C-2
Railhead Facilities	C-4	N/A	N/A	C-4	C-5	C-4
Cat: Airfield						
Airfield Facilities	C-4	N/A	C-4	C-2	N/A	C-2
Airfield Pavements	C-2	C-1	C-3	C-2	C-1	C-2
Cat: Ports						
Piers & Wharfs	N/A	N/A	N/A	N/A	N/A	C-4
Staging & Marshaling Facilities	N/A	N/A	N/A	N/A	N/A	C-3
Rail & Truck Operations Areas	N/A	N/A	N/A	N/A	C-5	C-4
Terminal Intermodal Facilities	N/A	N/A	N/A	N/A	C-5	C-2

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STRATEGIC MOBILITY AREA MACOM: AMC

Category / Sub-Category	Anniston Army Depot	Redstone Arsenal	Rock Island Arsenal	Aberdeen Proving Grounds	Natick R&D Center
AREA C-RATING	C-2	C-3*	C-3	C-4	C-1
Cat: Road & Trail Network					
Surfaced Roads	C-3	C-2	C-3	C-2	C-1
Cat: Railroad					
Railroad Track	C-1	C-1	C-2	C-4	N/A
Railhead Facilities	N/A	N/A	C-4	N/A	N/A
Cat: Airfield					
Airfield Facilities	N/A	C-4	C-4	C-4	N/A
Airfield Pavements	N/A	C-2	C-4	C-3	C-1
Cat: Ports					
Piers & Wharfs	N/A	N/A	N/A	C-4	N/A
Staging & Marshaling Facilities	N/A	C-2	N/A	N/A	N/A
Rail & Truck Operations Areas	N/A	N/A	C-3	N/A	N/A
Terminal Intermodal Facilities	N/A	N/A	C-3	N/A	N/A

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HOUSING AREA MACOMs: MDW, MTMC, HSC

Category / Sub-Category	Ft Ritchie	Ft Belvoir	Bayonne	Ft Detrick
AREA C-RATING	C-3	C-3	C-3	C-2
Category: Family Housing				
Family Housing	C-3	C-3	C-2	C-2
Category: Unaccompanied Personnel Housing				
Senior Enlisted Bachelor/Bachelor Officer Quarters	C-3	C-4	C-4	C-4
Barracks	C-4	C-4	C-4	C-3
Transient Housing Facilities	C-1	C-4	C-4	C-4
Category: Dining Facilities				
Dining Facilities	C-2	C-2	N/A	C-1

HOUSING AREA MACOM: FORSCOM

Category / Sub-Category	Fort Carson	Fort Stewart	Fort Riley	Fort Camp -bell	Fort Drum	Fort Bragg	Fort Hood	Fort Lewis
AREA C-RATING	C-3*	C-3	C-3	C-3	C-2*	C-3	C-3	C-3
Category: Family Housing								
Family Housing	C-2	C-3	C-3	C-3	C-4	C-4	C-2	C-4
Category: Unaccompanied Personnel Housing								
SEBQ / BOQ	C-4	C-4	C-3	C-4	C-4	C-4	C-4	C-4
Barracks	C-3	C-4	C-4	C-4	C-3	C-4	C-3	C-3
Transient Housing Facilities	C-4	C-1	C-1	C-2	C-1	C-2	C-2	C-1
Category: Dining Facilities								
Dining Facilities	C-1	C-3	C-3	C-3	C-1	C-2	C-3	C-3

FOR TEST PURPOSES ONLY

HOUSING AREA MACOM: TRADOC

Category / Sub-Category	Fort Benning	Fort Gordon	Fort Knox	Fort Sill	Carlisle Barracks	Fort Eustis
AREA C-RATING	C-3	C-2*	C-3	C-3	C-3	C-4
Category: Family Housing						
Family Housing	C-4	C-2	C-3	C-3	C-2	C-4
Category: Unaccompanied Personnel Housing						
SEBQ / BOQ	C-3	C-4	C-4	C-4	C-4	C-4
Barracks	C-4	C-3	C-4	C-4	C-4	C-4
Transient Housing Facilities	C-2	C-4	C-1	C-1	C-2	C-2
Category: Dining Facilities						
Dining Facilities	C-3	C-2	C-3	C-3	N/A	C-4

HOUSING AREA MACOM: AMC

Category / Sub-Category	Anniston Army Depot	Redstone Arsenal	Rock Island Arsenal	Aberdeen Proving Grounds	Natick R&D Center
AREA C-RATING	C-1	C-3	C-4	C-4*	C-3
Category: Family Housing					
Family Housing	C-1	C-3	C-3	C-3	C-2
Category: Unaccompanied Personnel Housing					
SEBQ / BOQ	N/A	C-4	C-4	C-3	N/A
Barracks	N/A	C-3	C-4	C-3	C-4
Transient Housing Facilities	N/A	C-2	C-4	C-4	N/A
Category: Dining Facilities					
Dining Facilities	N/A	C-2	C-4	C-2	C-2

FOR TEST PURPOSES ONLY

COMMUNITY FACILITIES AREA MACOMs: MDW, MTMC, HSC

Category / Sub-Category	Ft Ritchie	Ft Belvoir	Bayonne	Ft Detrick
AREA C-RATING	C-3	C-3	C-3	C-2*
Category: Post Exchange				
Post Exchange	C-2	C-2	C-2	C-4
Category: Commissary				
Commissary	C-4	C-4	N/A	C-3
Category: Hospital & Medical Facilities				
Dental Clinic	C-4	C-1	N/A	C-4
Hospitals	N/A	C-2	N/A	N/A
Troop Medical Clinics	C-2	C-4	C-4	C-2
Veterinary Facilities	C-4	C-1	N/A	C-4
Category: Child Development Centers				
Child Development Centers	C-1	C-4	C-2	C-1
Category: Community Support				
Education Facilities	C-4	C-3	N/A	C-4
Physical Fitness Centers	C-4	C-4	C-4	C-4
Outdoor Sports & Recreation	C-3	C-3	C-3	C-2
Recreation Facilities	C-3	C-2	C-3	C-3
Service Facilities	C-3	C-4	C-1	C-3

FOR TEST PURPOSES ONLY

COMMUNITY FACILITIES AREA MACOM: FORSCOM

Category / Sub-Category	Fort Carson	Fort Stewart	Fort Riley	Fort Camp -bell	Fort Drum	Fort Bragg	Fort Hood	Fort Lewis
AREA C-RATING	C-3*	C-3	C-2	C-3	C-2	C-3	C-3	C-2
Category: Post Exchange								
Post Exchange	C-3	C-4	C-3	C-3	C-2	C-2	C-3	C-2
Category: Commissary								
Commissary	C-1	C-2	C-4	C-1	C-1	C-3	C-1	C-2
Category: Hospital & Medical Facilities								
Dental Clinic	C-1	C-2	C-1	C-3	C-1	C-3	C-1	C-3
Hospitals	C-1	C-3	C-1	C-1	N/A	C-4	C-3	C-1
Troop Medical Clinics	C-3	C-4	C-2	C-4	C-1	C-4	C-3	C-2
Veterinary Facilities	C-4	C-3	C-2	C-4	C-2	C-4	C-4	C-4
Category: Child Development Centers								
Child Development Centers	C-4	C-4	C-1	C-4	C-1	C-2	C-4	C-1
Category: Community Support								
Education Facilities	C-1	C-3	C-2	C-4	C-4	C-2	C-4	C-2
Physical Fitness Centers	C-4	C-2	C-2	C-3	C-1	C-4	C-4	C-3
Outdoor Sports & Recreation	C-3	C-2	C-2	C-3	C-3	C-3	C-3	C-3
Recreation Facilities	C-2	C-3	C-3	C-4	C-3	C-4	C-4	C-3
Service Facilities	C-2	C-3	C-2	C-3	C-3	C-3	C-4	C-3

FOR TEST PURPOSES ONLY

COMMUNITY FACILITIES AREA MACOM: TRADOC

Category / Sub-Category	Fort Benning	Fort Gordon	Fort Knox	Fort Sill	Carlisle Barracks	Fort Eustis
AREA C-RATING	C-3	C-3	C-2	C-2*	C-2	C-3
Category: Post Exchange						
Post Exchange	C-4	C-3	C-2	C-3	C-2	C-3
Category: Commissary						
Commissary	C-2	C-2	C-1	C-2	C-4	C-1
Category: Hospital & Medical Facilities						
Dental Clinic	C-4	C-2	C-2	C-1	C-1	C-4
Hospitals	C-4	C-2	C-2	C-3	C-4	C-4
Troop Medical Clinics	C-2	C-2	C-3	C-2	C-1	C-4
Veterinary Facilities	C-3	C-4	C-2	C-4	C-1	C-4
Category: Child Development Centers						
Child Development Centers	C-1	C-4	C-1	C-4	C-1	C-4
Category: Community Support						
Education Facilities	C-3	C-2	C-2	C-3	C-4	C-4
Physical Fitness Centers	C-4	C-2	C-3	C-4	C-4	C-3
Outdoor Sports & Recreation	C-3	C-3	C-3	C-3	C-2	C-3
Recreation Facilities	C-3	C-2	C-3	C-3	C-3	C-2
Service Facilities	C-3	C-4	C-3	C-3	C-2	C-4

FOR TEST PURPOSES ONLY

COMMUNITY FACILITIES AREA MACOM: AMC

Category / Sub-Category	Anniston Army Depot	Redstone Arsenal	Rock Island Arsenal	Aberdeen Proving Grounds	Natick R&D Center
AREA C-RATING	C-3	C-2	C-3	C-3	C-2
Category: Post Exchange					
Post Exchange	C-4	C-2	C-3	C-2	C-3
Category: Commissary					
Commissary	N/A	C-2	C-1	C-2	N/A
Category: Hospital & Medical Facilities					
Dental Clinic	N/A	C-2	C-4	C-2	N/A
Hospitals	N/A	C-1	C-4	C-2	N/A
Troop Medical Clinics	C-1	C-2	C-2	C-3	C-2
Veterinary Facilities	N/A	C-2	N/A	C-2	N/A
Category: Child Development Centers					
Child Development Centers	N/A	C-1	C-4	C-4	C-1
Category: Community Support					
Education Facilities	N/A	C-1	C-4	C-4	C-1
Physical Fitness Centers	C-4	C-4	C-1	C-4	N/A
Outdoor Sports & Recreation	C-4	C-2	C-3	C-3	C-2
Recreation Facilities	C-4	C-2	C-3	C-3	C-2
Service Facilities	C-1	C-2	C-3	C-3	N/A

FOR TEST PURPOSES ONLY

UTILITY SYSTEMS AREA MACOMs: MDW, MTMC, HSC

Category / Sub-Category	Ft Ritchie	Ft Belvoir	Bayonne	Ft Detrick
AREA C-RATING	C-3	C-3	C-2	C-1
Category: Heat/ AC				
Heat/ AC Source & Distribution	C-1	C-3	C-3	C-1
Category: Electric				
Electric Source, Distribution & Substations	C-4	C-3	C-4	C-1
Category: Water				
Water Treatment, Storage, & Distribution	C-2	C-2	C-1	C-2
Category: Sewer				
Sewage Treatment, Disposal & Collection	C-3	C-2	C-1	C-1

FOR TEST PURPOSES ONLY

UTILITY SYSTEMS AREA MACOM: FORSCOM

Category / Sub-Category	Fort Carson	Fort Stewart	Fort Riley	Fort Camp -bell	Fort Drum	Fort Bragg	Fort Hood	Fort Lewis
AREA C-RATING	C-3*	C-3	C-2	C-2	C-1	C-2	C-3	C-2
Category: Heat/AC								
Heat / Air Conditioning Source & Distribution	C-1	C-3	C-2	C-2	C-1	C-1	C-3	C-2
Category: Electric								
Electric Source, Distribution & Substations	C-2	C-3	C-2	C-3	C-2	C-1	C-2	C-1
Category: Water								
Water Treatment, Disposal & Collection	C-2	C-2	C-1	C-2	C-1	C-3	C-4	C-3
Category: Sewer								
Sewage Treatment, Disposal & Collection	C-1	C-2	C-3	C-2	C-1	C-2	C-2	C-3

FOR TEST PURPOSES ONLY

UTILITY SYSTEMS AREA MACOM: TRADOC

Category / Sub-Category	Fort Benning	Fort Gordon	Fort Knox	Fort Sill	Carlisle Barracks	Fort Eustis
AREA C-RATING	C-3*	C-2	C-2	C-2	C-1	C-3
Category: Heat / AC						
Heat/ Air Conditioning Source & Distribution	C-3	C-2	C-1	C-2	C-1	C-2
Category: Electric						
Electric Source, Distribution & Substations	C-2	C-1	C-2	C-1	C-1	C-3
Category: Water						
Water Treatment, Storage, & Distribution	C-2	C-2	C-2	C-3	C-1	C-4
Category: Sewer						
Sewage Treatment, Disposal & Collection	C-1	C-1	C-3	C-2	C-2	C-3

FOR TEST PURPOSES ONLY

UTILITY SYSTEMS AREA MACOM: AMC

Category / Sub-Category	Anniston Army Depot	Redstone Arsenal	Rock Island Arsenal	Aberdeen Proving Grounds	Natick R&D Center
AREA C-RATING	C-2	C-3	C-2	C-3	C-2
Category: Heat / AC					
Heat / Air Conditioning Source & Distribution	C-2	C-3	C-2	C-3	C-3
Category: Electric					
Electric Source, Distribution & Substations	C-2	C-2	C-3	C-3	C-2
Category: Water					
Water Treatment, Storage, and Distribution	C-1	C-2	C-2	C-3	C-2
Category: Sewer					
Sewage Treatment, Disposal & Collection	C-2	C-3	C-2	C-2	C-2

Appendix E - Summary of Field Comments on Facility Sub-Category Standards

STANDARDS REVIEW SUMMARY

FACILITY SUBCATEGORY	REQUIRE-MENT	INSTALLATION (MACOM)	PROBLEMS
1. Airfield Facilities	Review	Ft Sill (TRADOC) Ft Bragg (FORSCOM)	No standards Inadequate stds.
2. Airfield Pavement	Add	Ft Stewart (FORSCOM) Ft Sill (TRADOC)	Add NAVAIDs Inadequate stds.
3. Ammunition Storage	Review	Redstone Arsenal (AMC)	Igloos criteria
4. Ammunition Maintenance			
5. Applied Instruction Facility	Review	Ft Stewart (FORSCOM)	Too stringent
6. Army Reserve Facility			
7. Barracks	Review	Ft Gordon (TRADOC) Ft Bragg (FORSCOM)	AIT Barracks need separate standards
8. Bulk Fuel Receipt, Issue, & Storage Site			
9. Child Development Center	Review	Ft Detrick (HSC) Ft Bragg (FORSCOM)	Need facility standards
10. Commissary	Review	Ft Carson (FORSCOM)	
11. Confinement Facilities			
12. Dental Clinic			
13. Dining Facilities	Review	Ft Carson (FORSCOM)	
14. Education Facilities	Review	Ft Bragg (FORSCOM)	Need different standards for Army education facilities and dependent schools.

STANDARDS REVIEW SUMMARY continued

FACILITY SUBCATEGORY	REQUIRE- MENT	INSTALLATION (MACOM)	PROBLEMS
15. Electric Source, Distribution, & Substations	Revise	Ft Carson (FORSCOM) Ft Riley (FORSCOM) Ft Sill (TRADOC) Schofield Barracks (USARPAC)	Need more detailed standards
16. Family Housing	Review	Ft Gordon (TRADOC) Ft Drum (FORSCOM) Ft Bragg (FORSCOM)	Summary C-ratings in ISR software
17. General Purpose Administrative Facilities	Review	Redstone Arsenal (AMC) Aberdeen Proving Grounds (AMC)	Handicap Access; Utilities component
18. General Purpose Instructional Facility	Revise	Carlisle Barracks (TRADOC)	Need different classroom standards than ACOE
19. General Supply & Storage Facilities	Revise	Aberdeen Proving Grounds (AMC)	Utilities component
20. Heat/AC Conditioning Source Distribution	Revise	Ft Carson (FORSCOM) Ft Benning (TRADOC) Ft Bragg (FORSCOM) Ft Sill (TRADOC)	More detailed standards; CATCODE changes needed
21. Hospital			
22. Individual Weapon Qualification Ranges	Review/Add	Ft Hood (FORSCOM) Ft Bragg (FORSCOM) Ft Campbell (FORSCOM) Ft Sill (TRADOC)	Inspection criteria; CATCODE structuring

STANDARDS REVIEW SUMMARY continued

FACILITY SUBCATEGORY	REQUIRE- MENT	INSTALLATION (MACOM)	PROBLEMS
23. Information Management	Review	Ft Carson (FORSCOM)	Too inflexible
24. Maintenance Facilities	Review	Aberdeen Proving Grounds (AMC)	Utilities Components
25. Major Weapon Systems Ranges	Review/Add	Ft Hood (FORSCOM) Ft Bragg (FORSCOM) Ft Detrick (HSC) Ft Campbell (FORSCOM)	Too Stringent & Inflexible; Inspection criteria
26. Maneuver Areas	Review	Ft Bragg (FORSCOM) Ft Sill (TRADOC)	Too Inflexible
27. National Guard Units			
28. Outdoor Sports & Recreation Facilities	Review	Ft Sill (TRADOC)	Too generic; Need separate playground standards
29. Physical Fitness Centers			
30. Piers & Wharves	Add	Bayonne (MTMC)	No standards
31. Post Exchange			
32. Production Facilities	Review	Aberdeen Proving Grounds (AMC)	Utility components
33. Railhead Facilities	Review/Add	Redstone Arsenal (AMC) Ft Sill (TRADOC) Ft Benning (TRADOC)	Develop standards books with pictures
34. Railroad Track			

STANDARDS REVIEW SUMMARY continued

FACILITY SUBCATEGORY	REQUIRE- MENT	INSTALLATION (MACOM)	PROBLEMS
35. Rail & Truck Opns.			
36. Recreation facilities			
37. Research & development building			
38. Research & Develop- ment Ranges			
39. Senior Bachelor Enlisted/Bachelor Quarters		Ft Bragg (FORSCOM)	
40. Service Facilities			
41. Sewage Treatment, Disposal & collection	Revise	Ft Sill (TRADOC)	Need more detailed standards.
42. Staging & Marshaling			
43. Surfaced Roads	Review	Redstone Arsenal (AMC)	Correct requirements algorithms
44. Terminal Intermodal Facilities			
45. Transient Housing	Review	Ft Gordon (TRADOC) Bayonne (MTMC)	
46. Troop Medical Clinics			
47. Unit Operations Building			
48. Veterinary Clinic	Review	Ft Gordon (TRADOC)	
49. Water Treatment, Storage & Distribution	Review	Ft Benning, Ft Sill (TRADOC) Ft Bragg (FORSCOM) Schofield Bks (USARPAC)	Need detailed standards.

Appendix F - Software Improvements for Future Versions of the ISR Programs

These are recommendations from the test installations for improvements to the software. These are being worked for future versions of the ISR program.

General:

- (1) Change the order of data file indexing so that it is in facility order instead of UIC order.
- (2) Change the Appropriations percentage entry screen so that it will show what final percentages are being used by the program.
- (3) No data can be edited after a color rating has been entered for a facility. (Will do this for ease of use, although the audit trail between the inspection sheets and the data base records may be lost.)

Data Pull:

- (4) The data pulled from RPLANS for the installations did not contain Maneuver Areas.
- (5) Use Maneuver Area in acres in ISR (in RPLANS it is in units of each).
- (6) The data pulled from RPLANS for the installations did not contain very many of the UICs used at the installations. (This is a problem with the data bases at the installations not matching the ASIP. Will revise software to accept installation UICs, but will not pull directly from installation data bases.)

Appropriations Reports:

- (7) Allow edits in the Appropriations section to reflect "in-progress" construction.
- (8) Allow an easy exit from the Appropriations section without having to enter all of the data or build all of the data files.

Reports:

- (9) There should be a heading placed on every page of all ISR reports.
- (10) All ISR report pages should be numbered.
- (11) Remove the * from C-ratings (in the reports) that do not have an associated FCG; i.e. Railhead, etc.

(12) Add the word COMPLEX to all reports using "special" non-RPLANS installation roll-ups.

(13) Show units on reports where assets are displayed.

(14) Remove the Consolidation Report from ISR.

Editing/ Data Entry:

(15) Allow changing and deleting UICs. (This capability already exists.)

(16) Allow changing a facility number.

(17) Allow entering a single facility number and going to it directly.

(18) Sort the facility windows by INSNO (installation number).

(19) After a facility number is entered, show a description of that facility on the screen.

(20) On the ADD facility screen, show unit of measure after FCG is entered.

(21) Allow Commander's Over Write function to incorporate a "N/A" in addition to C-1 through C-5.

Printers:

(22) Make printer options that allow Laser Jet 4 or dot matrix printers to be used.